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*Illustrated.

The Rubber Export Trade.

OUR rubber manufacturers, as a rule, have been too much occupied in supplying the home demand for their products to extend much effort in the pursuit of foreign trade. They will not admit that American rubber manufactures are surpassed in any other country, but, on the contrary, claim such superiority in most lines as would cause prices to be lost sight of in a competitive market. Even in respect to prices an advantage is claimed by the makers of mechanical rubber goods, due to the use of improved methods in this country. In the New York house of a leading firm are shown samples of rubber belting of their own and of English manufacture, the former of which have the advantage in point of pliability and durability; yet the English product sells at a higher figure. The same is said by rubber clothing manufacturers to be true of heavy rubber coats and of many other articles. In the making of many specialties, such, for instance, as dress shields, and many articles of druggists' sundries, the advantage in quality, if not in price, is confidently claimed to be on the side of the American manufacturers. But, with the best market in the world for such goods right at their hands, it is not surprising that no considerable effort has been made in distant and less promising fields. Orders do come, however, from nearly every quarter of the globe, for American rubber goods, the aggregate being about twice as great as that of rubber manufactures imported.

"We sell a good deal of rubber belting and hose in Europe," said one dealer to an INDIA RUBBER WORLD representative. "Germany is a larger consumer of American mechanical rubber than any other country. England takes more such goods, it is true, but for redistribution, some of them going to Mediterranean ports, to South America and to Australia. Some are retained, too, in England, in preference to the goods made there. Wherever power machinery is used there is a chance to sell belting, and in placer mining there is room for a great deal of hose. Where irrigation is practiced there is another use for hose. These goods are sold mainly without effort on our part. Many commission houses in New York make a business of filling foreign orders for goods, and most of our sales for export are to them. Sometimes foreign houses desiring goods in our line order direct, referring to bankers here with whom they have a credit, and we collect the money upon presentation of the bill of lading at the bank. Our export trade is practically a cash trade. Some years ago we shipped an order on credit to Cuba, with a result which made us careful not to repeat that way of doing business. We ship frequent orders to Cuba and some to Australia and South America, but not so many to Mexico. Canada takes no mechanical rubber goods from us. Since the Canadian tariff has been raised to 35 per cent. *ad valorem* it is prohibitory so far as the United States are concerned, and the Canadians don't want English belting and hose. They have, therefore, begun the making of these goods for themselves, very much upon the American plan. You will understand how

much behindhand the English are in their methods when I tell you that, prior to five years ago, it is probable that a calender had never been used in that country in a mechanical goods manufactory.

"What seems to be the outlook for increased exports of rubber goods?" the WORLD man inquired.

"There is little prospect of rapid improvement. The development of foreign trade must be slow. There must be a demand created, in many sections, before any supplies will be needed.

"To day the English and Germans control the rubber goods trade outside of the United States. They have branch houses all over South America, which gives them a great advantage over us. We have no inducement to open branch houses abroad because there are no American ships running directly to those countries. On the other hand, it is contended that, on account of there being little traffic between our country and South America, for instance, it would not pay to establish steamship lines. So the situation is likely to remain as it is for some time.

"Meanwhile, every bill of goods we sell abroad serves as an advertisement and brings us more orders. It is gratifying to find that a foreign customer once gained is seldom lost. We are shipping goods to people whom we have not seen for several years, but who continue to buy from us because they were pleased with their first order and because, like most foreigners, they hesitate to experiment with new houses so long as we can satisfy them. We must be content to go slowly, feeling confident that wherever American rubber goods become known they will find customers. We cannot rush to a strange country, though, and force the sale of goods as enterprising 'drummers' get credit for doing in this country."

The gentleman here quoted states that Russia is beginning the manufacture of mechanical rubber goods.

"We do not need any foreign market for our rubber clothing," said the president of a manufacturing corporation. "The home demand has kept up so closely with the supply that we have not needed to look out further for buyers. The commission houses here bring us frequent orders, and one order, if satisfactorily filled, is generally good for three others. We send rubber coats and *ponchos* to South America—more of the latter, however, for the natives seldom wear a coat. The *poncho* is like a blanket with a hole cut through the top for the wearer's head to come through. I understand that in England these have even been made of the same material as the mackintosh. We can undersell at a profit the rubber clothing manufacturers of the world, except when it comes to mackintoshes. Our heavy rubber coats, made with the aid of calendering and steam curing, are so far superior to the foreign-made goods by the acid-curing and sun-heating processes, that competition is easy for us. It is not improbable, however, that the mackintosh will supersede other forms of rubber garments here as it has well-nigh done in England. It may be four or five years before the change comes, but it is to be looked for."

"Have you never made an effort for foreign trade?"

"Oh, yes, in a small way. Now and then a swindling concern—and I suppose, sometimes, an honest one—is gotten up to send a man abroad, or perhaps several of them, to represent American firms, and I 'chip in,' probably $500 at a time, as my share of the expenses. We have gotten some orders in this way and altogether, perhaps, the result has produced a benefit to us. But the conditions are not such as lead us to establish agencies or branch houses in other countries."

The Government at Washington records the exportation of about 8000 pairs of rubber boots and shoes a month, and the WORLD inquired of the manager of a house on Broadway, New York, for some details as to this trade.

"We have had no need of any other than the home market," said he, "except that we regard Canada as a home market. We 'drum' that trade and make large shipments there. We send a good many to England, too, and we have a good customer in Copenhagen. We ship goods to China and Japan in considerable quantity, and some to Australia, but the trade in Mexico and south of that is not worth much."

The Wholesale Ticket Buyer.

IN all well regulated lines of business the big buyer enjoys more attention and better prices than the little one. The wholesale purchaser always claims as his right better treatment than the retail purchaser, and he has no trouble in enforcing his claim.

In the United States, however, there is a class of wholesale buyers who pay the same prices as do the retail purchasers, and who get no more courteous treatment. We refer to the purchasers of railroad tickets, in other words, the commercial travellers. We have in this country more than two hundred and fifty thousand travelling salesmen. To every mile that the ordinary passenger rides, these men ride hundreds, and that too without any chance of rebate in their tickets, and without any other advantages than what they can secure by experience. The question has been many times agitated whether it would not be wise to have mileage tickets issued that would be good on any road in the United States. Indeed, a scheme for this has been very carefully devised, brought before several of the commercial travellers' associations, and published in the newspapers. That, however, is as far as it has gone. Is it not time, therefore, that the business men, rubber manufacturers as well as others, who are sending out commercial travellers by the thousands, should unite in a concerted effort that will secure to the commercial traveller a wholesale rate for his railroad tickets and enable the house sending him out to furnish mileage tickets which will carry him all over the country at a fair rate? That such a policy would be of advantage to the railroads no broad minded man can question, for many a trip, which is to-day put off because of the expense over certain roads, would be taken, and many a route which is now curtailed because of the expense would be finished to the end. Does it not then behoove our business men to agitate this matter and keep on agitating until a reform is effected?

The Weather Outlook.

"RUBBER men are very much interested in the chances for a hard winter this year, if the frequency of their visits to our office is any indication," said Sergeant L. N. Jesunofsky, of the U. S. Signal Office the other day. "Possibly their hopes may be realized. Thus far the temperature for the whole season has been above a normal one, and since the first of the month it has approached severity. So far as old sayings, so common among country folk, are concerned, the indications of a severe season in every direction are plentiful.

"The squirrel has taken more pains with his nest, cats have more luxuriant fur, which is true of all animals in that category, while the enthusiast goes so far as to state that nut shells are thicker this season than generally. Scientifically, we have not verified the truth of these sayings in years gone by, and shall have to reason from broad principles, that nature in its mysterious ways, issues its warnings in every direction. With us, however, we are not given to far-sighted prediction; twenty-four and thirty-six hours are enough for us to leap into the future of weather prognostication. At present, Wyoming, Montana, Minnesota and Michigan are covered with a good depth of snow, from Cincinnati north there are at least two inches, and in Canada for two weeks past it has been deep. Where the fall is light, there is, of course, plenty of bad walking. Ice is to be found everywhere north of Cincinnati and Washington, and a thin film has been formed as far South as a line drawn through Norfolk, Charlotte, Knoxville, Memphis, Little Rock, Palestine, Texas, and Northern New Mexico. The rain-fall on the Atlantic coast, as far south as Florida, has been abundant. These atmospheric disturbances, in the main, have occurred since December 1, and have fairly inaugurated what may be termed a cold winter."

Sergeant Dunn, the officer in charge of the Signal Bureau in New York City, is at present so ill as to be unable to attend to his duties, but rubber men are felicitating themselves that fortune has thrown in their way a man who understands their interests so well as Sergeant Jesunofsky.

A Growing Evil.

THE amount of rubber clothing returned to manufacturers is rapidly increasing. This is a condition of affairs which arises from no fault of the manufacturer, except in so far as each individual is backward in taking a stand against it, for fear that his competitor may thereby secure some of his trade.

Garments are made and shipped from the mills in perfect condition, but cheap goods are sold under precisely the same guarantees as the highest priced goods, and these guarantees are generally to the effect that the garments are waterproof, and will not stick, crack, peel, nor come apart at the seams. The result is that a cheap garment on which manufacturer, jobber and retailer alike make little or no profit is sold to a consumer who carelessly gets it thoroughly wet, rolls it in a bundle and throws it in a corner with the natural result that the water evaporating against the inner cloth surface causes the coating to peel off and to come apart at the seams.

This operation is repeated at intervals from one day to a year, and then the garment is taken back to the retailer with the declaration that it is "No Good." If the purchaser happens to be a good customer, he gets a new garment in place of the one returned, and in the course of time the misused coat finds its way back to the manufacturer, and he, through fear of losing trade, is obliged to give credit for it. Sometimes the garment is covered with mud, torn and patched in places, but invariably the party who returns it writes that it has been worn but one day.

This state of things is of course unknown in other lines of business. If a man buys a cheap suit of clothes and it does not give satisfactory wear, he considers it the fault of the price and not the clothes; but the cheaper the rubber coat the more service he expects it to give. One leading company in the trade has courage enough to say in their printed catalogues; "We guarantee all garments to be free from manufacturers' imperfections, and for any found at fault we will cheerfully exchange or give credit for their return, but we will not allow the return of any worn or soiled garments."

It seems perfectly clear under the circumstances that it would profit all the manufacturers to join in an agreement not to receive nor give credit for the return of any garment showing signs of wear, which cost the jobber less than two dollars net. Action of this kind would save all the mills and dealers many dollars, prevent constant difficulties between the seller and consumer, and increase the consumption of higher priced and more profitable goods, while allowing each manufacturer to raise his standard of quality to the highest plane.

A MEETING of the Mechanical Rubber Goods Association was held at the Astor House, New York, December 11, at which a full attendance was present. The object of the meeting was to devise means to further consolidate the interests of the various members of the association, and to this end, a free interchange of views was had by those present. All ideas of a trust were emphatically disclaimed by those present, the leading manufacturers refusing to take part in any proceedings of that character, but any wise measure looking to a uniformity of prices and a rigid grading of goods was met with unanimous favor. The meeting was harmonious, and finally adjourned to meet early in January upon the call of its officers.

To supply a constant demand for complete files of THE INDIA RUBBER WORLD for the first year, we need copies of the December '89, January and February '90 numbers. For such copies we will pay fifty cents each, or mail the sender other current numbers.

THE INDIA RUBBER PUBLISHING CO.,
114-115 Tribune Building,
New York.

New Goods in the Market.

TO MANUFACTURERS AND PATENTEES:

It is our aim to embody in this department descriptions and illustrations of all the latest novelties introduced in the market, to the end that jobbers, retailers and buyers of rubber goods generally may look here for information as to everything new that each month or season brings forth. Manufacturers and patentees are, therefore, most cordially invited to co-operate with us in making the department as complete and attractive as possible—the distinct understanding being that no charge whatsoever, either direct or indirect, will be made for these publications. Our reward will come through giving our readers valuable information; and that will be reward enough if manufacturers but give the information freely and in all cases at the earliest practicable moment.

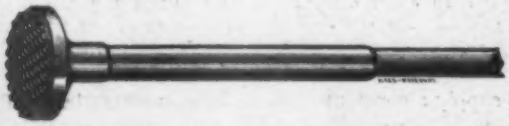
In forwarding descriptions of new goods, be careful to write on one side of the paper only; be brief, but always write enough to give the buyer a clear idea of the article you offer; give your full address, plainly written; and in all cases send a small illustration or wood cut if you have one.

THERE are erasers and erasers, and against almost all of them the artist has a grudge. In many cases this dislike arises from the fact that no matter how good a compound is put into the erasive rubber, it will smooch. To overcome this a Boston genius has invented an eraser which is in reality a diminutive rubber brush. The rubber teeth, as they pass lightly over the

paper, not only remove the pencil mark, but remove it without any smooching and leave the surface of the paper as fine as it was before it had been written on. This brush is known as Bailey's Erasive Rubber Brush, and is well shown in the accompanying illustration. Manufactured by C. J. Bailey & Co., Boylston Building, Boylston Street, Boston, Mass.

—Messrs. Fowler & Co. of 65 Beacon Street, Worcester, Mass., have a device that we illustrate, by means of which sash rods and curtain poles may be adjusted without the use of screws,

nails, or spur joints, and consequently without mutilating casings. The rod or pole is held in position by the friction of



a spiral spring acting against a rubber cushion. Another merit of the Perfection Fixture is that it may be adjusted or removed instantly.

—A rubber boot has its advantages, and so has a leather boot. To combine the two, leaving out the troublesome features and incorporating the valuable ones, was what John H. Parker, of Boston, did when he invented the rubber upper, leather soled boot. Although these boots have been on the market for a number of years and have been subjected to numerous tests to ascertain their wearing qualities, the general verdict has been that they are in every way desirable. The rubber upper is made by the Boston Rubber Shoe Co., and is of their best stock. The leather sole is also of the most carefully selected stock and is guaranteed to give the fullest satisfaction. The arrangement for the fastening of the sole is represented in the central cut accompanying this article.

Stamp at top.

Stamp on bottom.

As a protection to the patentee, or perhaps better as a warning to those who are natural trespassers, there is a stamp placed both on the sole and on the top of the boot, fac-similes of which accompany this article. This boot has been popular among miners, firemen, sportsmen, contractors, brewers, etc., etc. Thousands of pairs are now in use and the demand is constantly increasing. Manufactured by John H. Parker, 103 Bedford street, Boston, Mass.

—In no way has rubber been more beneficial to the human race than in the line of elastic bandages. The amount of these bandages used the world over is something enormous, and contrary to the general supposition, it is not by invalids and weaklings that they are called into use, but many prominent athletes rely upon them for help. For example, the shoulder cap is used by professional pitchers, and many times prevents dislocation of the shoulder, and always relieves the strain of the muscles of the shoulder and arm. Indeed, for any one who is obliged to use an arm in sudden and violent exercise, one of these shoulder caps is a most excellent thing. In addition to this is what is known as the pitchers' elbow bandage, which acts as a support for the muscles near the elbow when pitching and throwing, and is in general use among all crack pitchers. It must not be thought that these elastic bandages are confined to the shoulder cap and the elbow bandage, for they can be made to

be attached to almost any portion of the body, and not only do they prevent strains of the muscles and hold them properly in place, but that bane of athletic manhood, varicose veins, is to a great extent overcome by the proper application of the elastic bandage. Manufactured for any purpose whatsoever by Wright & Ditson, Boston, Mass.

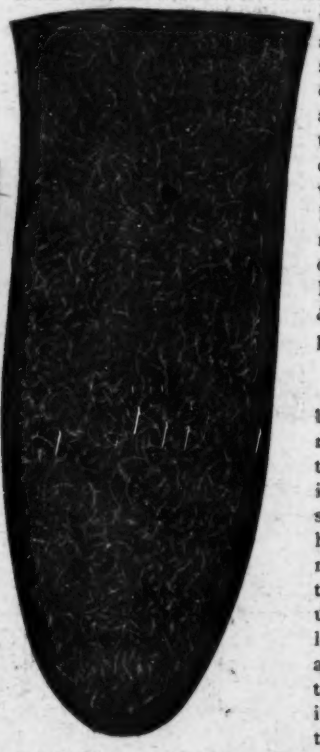
—Occupying a prominent position in THE INDIA RUBBER WORLD counting room is a large photograph recently received from the Boston Belting Company. It represents a large lot of their Excelsior rubber belting which they have just supplied to the Exchange and City Elevators at Buffalo, N. Y. We were so impressed with the amount of the order that we immediately asked for an illustration for our December paper, in order that our readers might have an opportunity of seeing it. This is by all odds the largest quantity of "New Goods" that it has yet been the privilege of the WORLD to illustrate. The cut used here was made from an actual photograph of the actual belts. This is probably one of the largest orders for belting ever filled and it was all of their high grade of Excelsior rubber belting which has become so well-known throughout the country.

—The North Weare Wool boot is a boot that of late is attracting a deal of attention, and is making a strong claim for the first place as the best wool boot on the market. The particular excellencies of this boot are, first, it is seamless, and is made by an entirely different process from any other wool boots to-day manufactured. The mode of manufacture is the same as that of cassimere—the warp, which is the strength of all fabrics, always runs lengthwise of the goods. The staple in these goods being worked lengthwise, adds strength and firmness, and when once brought from its mammoth size by fulling and other methods of work to the size of a common wool boot, it does away with all of the shrinking so common to the ordinary felt boot and it also allows a more comfortable fit to the foot. Aside from this, it is very durable, is free from all bunches, will not crack, and preserves all of the textile strength of the fabric. This is proven by a host of testimonials. For further information respecting this boot, one must apply to Converse & Pike, Boston, Mass.

—A new material that is advertised to take the place of hard rubber is something known as "Lamina Fibre." It is already used considerably for electrical purposes, and as a rule, comes in sheets 40x70 inches, in almost any thickness from 1-100th of an inch to 1¼ inches. It is made in red, black, grey, or light colors, and to the ordinary observer is very similar to vulcanite. It is, however, a trifle heavier, and has one difference. If placed in water it will, in time, absorb a certain amount of the moisture and swell up to nearly double its normal size. For hard roll tubing, for rods, for flexible sheet goods, and for washers it has been found a very valuable article. It is also sold to a certain extent in sheets to the trunk makers, where it takes the place of rawhide in making trunks, and is said to wear very well indeed. Manufactured by the Lamina Fibre Goods Co., 180 Summer Street, Boston, Mass.

—A grasshopper, green, natural and phenomenally durable is what some genius in rubber manufacture has turned out. It conceals a hook, and although seized by scores of bass or chub it still retains its shape and is as good bait as ever. For sale by Peck & Snyder, New York.

—The use of India rubber for gymnasium purposes is constantly on the increase. The Spalding Flat Rubber Straps, sometimes called the Pocket Gymnasium, have been known for some time, but the interest in them has of late so revived that we are constrained to put them among the new goods. The straps are made of a fine grade of rubber, either red or black, and are of such fine material that they will last almost indefinitely. They have also what is called the Goodyear Round Rubber Health Pull, made in the same colors and of the same excellent stock. For sale by A. G. Spalding & Bros., New York, Philadelphia and Chicago.



—The National India Rubber Company is having quite a run on their Patented Protected Heel Overshoe. Indeed it is one of the most popular specialties that this company has ever put out, and this is no doubt due to the fact that the improvement is a very useful one. Their new catalogue, in which they illustrated all the various styles of shoes to which they have adapted it, is in such demand among their customers that after the first distribution they have been obliged to issue a second edition of 10,000 more. The improvement consists substantially in an extension of the corrugation on the bottom of the heel some distance up the back, and in a later issue we hope to be

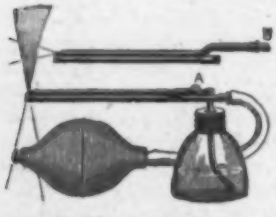
able to so illustrate it that our readers can see at a glance just what has been accomplished.

—An artistic novelty that is sure to take, and one of those that each progressive rubber man will wish that he had thought of first, is the new plush covered water bottle of the Tyer Rubber Co. This bottle is so made that the interior coating of rubber is preserved in all its strength and integrity, while upon the outside is put a beautiful covering of silk plush that will fitly match and keep warm the pink toes of the proudest beauty in America. They are made up in two colors, old gold, to suit the brunettes, and blue, the blondes. Speaking seriously, these are the most artistic goods that have ever been produced in this line, and will meet with a ready sale. Manufactured by the Tyer Rubber Co., Boston, Mass.

—One of the difficulties which manufacturers of mackintoshes have had to contend with has been to make a perfect fitting collar. The best coats are thoroughly vulcanized after being made and the process often causes garments to stretch or shrink. The American Rubber Company of Boston have adopted a patent collar which entirely overcomes this trouble and insures a perfect fitting garment about the neck and shoulders. This is the most important improvement in mackintoshes since the goods have become a large item among American clothing manufacturers. A new shaped garment for ladies' wear is the Westchester, made in mackintosh grades by the American Rubber Company, as shown in the illustration. It is a new English shape cloak with long cape, without sleeves, open under the cape for the arms, close fitting with cape buttoning down in back and front. It is more stylish than the Newmarket, and, unlike the latter, can be worn over any kind of garment, and what is very important to the retailer, will fit almost any lady; assorted lengths only are required.

—An exceedingly neat atomizer, and one that will be especially appreciated by tonsorial artists is The Witch, which is so made that the bulb and bottle can be easily held in one hand and the contents of the bottle sprayed. The bulb is made of a nice quality of white rubber. The fittings are made of hard rubber or French jet, and the whole article is manufactured by the Millard Manufacturing Co., of Providence, R. I.

—The successful vaseline atomizer of last season was one manufactured by Codman & Shurtleff, of Boston. This season they bring out another that is an improvement over that one, and has so caught the public taste that it is with difficulty that they keep up with their orders. The peculiar advantage of this atomizer is in the arrangement of its tubes. They are so arranged that by turning a little button the spray may be thrown directly upward, or to the right, to the left, or downward, and by the addition of a tiny tip it can be thrown straight ahead. In this way every part of the throat or the nasal cavities can be reached and the healing ointment sprayed upon the diseased tissues. For sale by Codman & Shurtleff, 13 Tremont Street, Boston, Mass.



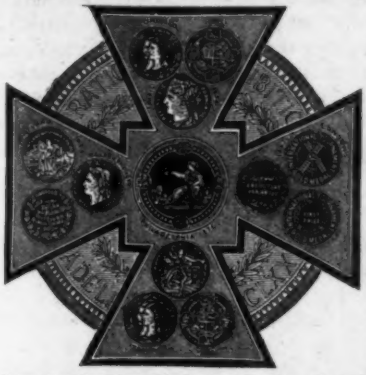
To protect a horse's fore feet is a great problem. A host of devices have been invented for this, and almost without exception have been found comparatively useless. It is estimated that a horse weighing 1000 lbs., and going at a 3.30 gait strikes a ton with his fore foot when he puts it down. If this figure be correct, it does not take a practical horseman to see the folly of driving good stock on granite paved streets. A shoe that was devised to overcome this trouble consists of a rubber oval band about a quarter of an inch thick, terminating at the ends in a caulk or cushion. Its general shape is that of a horse shoe, the rubber cushions representing the heel caulks. An iron plate goes with this, and the heel ends are shortened to give room for the rubber caulks. The rubber shoe, with a layer of canvas on its flattened side, goes against the foot, and is nailed on with the iron shoe, the whole forming an iron plate shoe with rubber heel caulks. This is known as the Reidy Patent Horse Shoe, and is highly recommended by many horse owners, among whom are some prominent rubber manufacturers. Manufactured by B. S. Hale & Son, Malden, Mass.

—Mr. George W. Fletcher, of the Wheathill India rubber works, Salford, England, has introduced a specialty in hose pipes which he calls a "martined" hose, for use in mines and other works. This is prepared in a special manner, and covered with twine, the object being to prevent the wearing of the hose when dragged along the ground. It is largely used in many of the principal mines and ironworks of Cornwall. Mr. Fletcher has also made a specialty of asbestos metalic packing for triple-expansion marine engines, and is finding an excellent demand for it. A considerable trade is also done by the firm in wire-gauze rings for pistons or spindles which are covered over with cotton or flax, and are much appreciated in large works.

—These pouches recently gotten out by the Davidson Rubber Co., Boston, combine a handsome tan color and soft velvety surface with great durability. The Orient or oval pouch is made in five sizes and the Occident (square) in one size. They are designed to carry plug or fine cut tobacco for either smoking or chewing and will be found to answer the purpose in every respect.

—The new rubber belting price list of the Gutta Percha and Rubber Manufacturing Co., New York, is a model of simplicity and convenience. On four small pages, in simple tabular form, they give the price per foot on every width and grade of belting that they make, from a one inch two-ply belt at 7c per foot on up to a sixty inch four-ply at $7.84 or a sixty inch six-ply at $11.76 per foot. The "Monarch" is placed in the fore front as their latest brand of high grade belting, and of it they say:

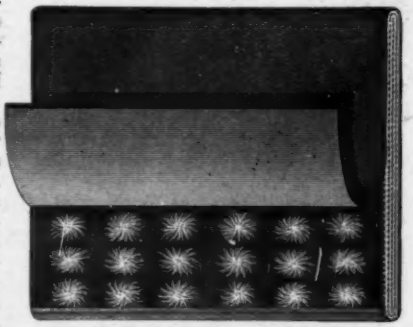
During the past six years that our Monarch Belt has been on the market we have steadily improved in the methods of its manufacture, and have seen it constantly grow in popular favor, until now it is almost universally acknowledged to be the best rubber belt manufactured. It is made in the ordinary manner, the duck forming the plies being first coated with rubber and pressed together. The plies are then further united by longitudinal rows of cotton cord stays or flexible rivets driven vertically through the plies. This cord, when inserted, is cut to project about one-fourth of an inch from both sides of the belt; these heads are then embedded in the rubber coating of the duck, under pressure; the outer covering is then applied, and the whole vulcanized together.



The object of this improvement is to overcome the fault in stitched or sewed belting, viz.: the breaking of the stitches and consequent separation of the plies caused by the stretching of the belt. By our method no strain can be brought on the flexible stays, as each cotton rivet is independent, and is kept in place by the unyielding head fastening; therefore these cord stays follow the stretch without changing position, and firmly hold the plies together under the greatest strains.

Of the celebrated "Maltese Cross" brand, they say:

We do not use our Maltese Cross brand upon any goods that we do not guarantee to be strictly first class. The belting is made on 32 oz. cotton duck, woven especially for belting purposes. The friction is made of carefully selected rubber of the kinds best adapted for holding the plies firmly together. The material for the cover is also carefully selected and prepared. The finish is smooth, giving the belt an elegant appearance. It is stretched to the utmost limit in process of manufacture, so in that direction can give the least possible trouble. In short, we have in this brand a strictly first-class belt, and one that we will fully guarantee.



—A recent addition to the extensive line of productions of the Stoughton Rubber Co., Boston, is a line of Leather Grain Carriage Drill, of which they are making quite a lot and with much satisfaction to their trade. Indeed, their orders for carriage drills and other lines of goods are so extensive that they will start in the New Year with four times as many orders on their books as they had one year ago. The Stoughton Company is forging steadily to the front, and their goods are of such uniform excellence that they take very high rank in the trade. All of their rubber clothing, by the way, including both gossamers and mackintoshes, are steam vulcanized, and all of their goods are guaranteed in consequence.

—A novelty with the Goodyear India Rubber Glove Manufacturing Co., New York, is the Ayers Patent Heel Plate, for rubber boots and lumbermen's shoes, of which they have kindly forwarded us a sample for examination. It certainly has every appearance of being a valuable patent for the purpose, inasmuch as it acts both as a protection against wear and as an ice creeper. The plates add ten cents to the list prices of their boots and shoes and are subject to the regular discount. Buyers for the trade should certainly give this heel plate an examination in placing their orders for heavy goods of this class. This company has the exclusive use of the Ayer's Heel Plate.

—The Lumbermen's Extra Heavy "Snow Excluder" is one of the latest novelties introduced by the National India Rubber Co., of Providence, and it is manufactured exclusively by them under the Williams patents, of which they have become the owners. It is very handsomely illustrated on page 16 of their catalogue of heavy weight goods which has lately been issued, and it is well worth the while of the trade to examine it carefully before making purchases in this line. They make it either with or without their patent protected heel, and either way it is a shoe which is certain to sell freely, wear well, and make customers every time.

—The latest novelty introduced by the New Jersey Car Spring and Rubber Manufacturing Co., Jersey City, is their tile matting, which, judging by the sample sent to this office, is destined for large popular favor. It is made with alternate red and black blocks, and a border in red, black and white. The surface may be either corrugated or plain and it certainly makes a very handsome floor covering, besides being very durable. They carry it in stock in rolls one yard wide and about 40 yards long, but can make any width required or any shape desired to fit odd shaped spaces, with border around the piece.

—The Wales-Goodyear Company, Boston, will put upon the market this season two grades of tennis shoes, the Goodyear and the Champion, ranging in quality as named. It will be remembered that the country people discovered last season that the tennis shoe was the ideal for pedestrianism on a rough road, and the demand that followed was remarkable.

The Boston Belting Co.'s Annual Meeting.

THE annual meeting of the stockholders of the Boston Belting Co. was held a few days ago at Tremont Temple, Hon. E. S. Converse, the president, in the chair, and the following officers were chosen:

Directors, W. S. Eaton, James Bennett Forsythe, I. P. T. Edmands, Geo. A. Miner, James Pierce, J. H. D. Smith, Geo. Whitney; treasurer, J. H. D. Smith; clerk, Edward Upham; auditors, Geo. O. Currier and Thomas Lang.

Hon. E. S. Converse and Mr. C. C. Converse, of the old board of directors, declined to have their names used as candidates for re-election, the pressing demands of their own business prompting them to do so. Appropriate resolutions were passed by the stockholders, expressing their appreciation of the long and valuable services rendered to the company by the retiring members of the board of directors, and their regret that such action on their part was deemed advisable. The meeting was harmonious and much satisfaction was expressed by the stockholders at the condition of the company as shown by directors and treasurer's reports.

A Very Valuable Device.

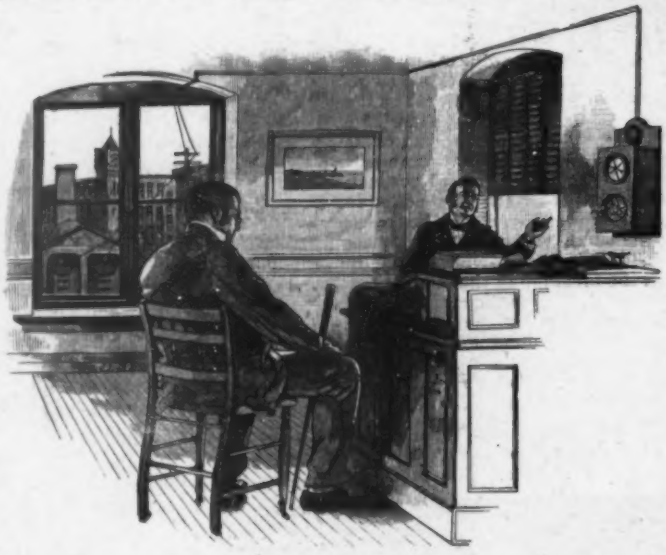
A VERY large rubber mill recently equipped several of its huge heaters with a new temperature recorder, one that not only showed the temperature of the heater itself, but that was connected with a dial in the office of the superintendent, where with a metal pen it wrote across the face of the dial the progress of the heat from moment to moment and left it there for future reference. The foreman of the heaters was an old-fashioned man who did not believe in new-fangled notions. He therefore, on principle, condemned the whole apparatus. A few days after the superintendent noticed that one heater had the half-turn of a valve given ten minutes late. He at once summoned his foreman and asked him how it was. The foreman firmly denied it.

"Send for your heater man," said the superintendent. The man came and the superintendent said:

"'John, on such an evening you were ten minutes late in giving the half-turn to that valve as you were getting the heat up."

For a moment John looked dumfounded, and then he said:

"Well, sir, the fact is, I was down in the engine-room and I did get ten minutes late, but I would like to know who in thunder told of it."



This little incident goes to show that the most reliable hands will bear watching, and that no watching is equal to the properly adjusted recording gauge. About the best of this kind perhaps is one known as the Telethermometer, which is indicated in a manner by the cheerful little office scene accompanying this article. Described in brief, the apparatus consists of two instruments, the transmitter and the receiver. The transmitter contains a finely adjusted thermometer and a dial upon which a pointer accurately indicates the temperature of the place where the transmitter is located. The whole is enclosed in a substantial case, which also contains an electrical device for the transmitting and indication of the temperature to the receiver. The two instruments can be miles apart, and yet the temperature at the place where the transmitter is located will be accurately indicated at the dial of the receiver. The receiver may have a recording dial daily or weekly on which a continuous record of the temperature is made in red ink, and also an alarm bell, which rings whenever the temperature rises or falls below the minimum or maximum point at which the thermometer has been set. Manufactured by the Standard Thermometer Co., Peabody, Mass.

MR. GEORGE H. MEEKER, of the Metropolitan Rubber Co., is now in the West taking spring orders on clothing and pushing the sale of the "G. H. M. Hard Rubber Tubing" and his imitation pigskin leather cloth, which is having a large sale among the leading carriage manufacturers in the country. Both of the above articles are of Mr. Meeker's invention.

Coorongite.

COORONGITE, says London *Industries*, "is an India rubber-like material, which was discovered many years ago near Salt creek, which empties itself into the Coorong, which is a salt water inlet extending from the mouth of the Murray for about ninety miles parallel to and a short distance from the coast of South Australia. It was first observed on the surface, in little hollows in the sand, and resembled patches of dried leather. It generally occurred in the swamps. The theory formed was that this substance had resulted from the overflow of petroleum or rock oil, and boring operations have since been conducted at various periods, with the view of tapping the oil-bearing strata from which this peculiar substance was supposed to have exuded. The greatest depth of bore attained was somewhere about 500 feet, and so far as is known the beds passed through were tertiary sands, clays and limestone, resting on blue clay slate. It is understood that a company has recently imported boring machinery from America, with a view of renewing the search for rock oil. There is a wide difference of opinion as to the origin of the substance which has led to these efforts. Some scientific authorities in this country and America ascribe to it a vegetable origin, and regard it as a gum exuding from a plant or a lichen. Other persons assign to it a subterranean origin, but this view is not at present supported by ascertained facts."

THE plant of the Excelsior Water Proof Company in Cleveland, Ohio, was completely gutted by fire on the 24th of October, the loss in building and stock being estimated by a member of the firm at $30,000.

"Why Overcure Rubber Goods?"

THE New England Fire and Heat Regulator Co., of Boston, whose graphic headline, "Why Overcure Rubber Goods?" introduces a most valuable heat controlling device, have received the following testimonial from the factory of G. W. Harris, Lowell, Mass.

From the day you applied it, up to this date, the regulator hasn't once failed to hold the temperature at the desired point. We usually carry a temperature of 160 deg., and except in one instance, when we wished to reduce this to 140 deg., the index of the thermostat hasn't been moved. In that case we set the index at 140 deg., and the temperature fell to, and was maintained at that degree as long as we wished it so. As you know, you have valves on both the superheated and exhaust steam pipes that convey steam to the room. By your perfect arrangement we can use either; but the greater part of the time since you applied the regulator we have used only the exhaust steam. To sum it all up, I consider your regulator a valuable addition to a drying-room or kiln, where a uniform temperature is essential.

Chas Goodyear

Pioneers of the Rubber Business.

CHARLES GOODYEAR.

CHARLES GOODYEAR was born in New Haven, December 29, 1800. He was the son of Amasa Goodyear, and the eldest among six children. His father was quite proud of being a descendant of Stephen Goodyear, one of the founders of the colony of New Haven in 1638.

Amasa Goodyear owned a little farm on the neck of land in New Haven which is now known as Oyster Point, and it was here that Charles spent the earliest years of his life. When, however, he was quite young, his father secured an interest in a patent for the manufacture of ivory buttons, and looking for a convenient location for a small mill, settled at Naugatuck, Conn., where he made use of the valuable water power that is there. Aside from his manufacturing, the elder Goodyear ran a farm, and between the two lines of industry kept young Charles pretty busy.

In 1816, Charles left his home and went to Philadelphia to learn the hardware business. He worked at this very industriously until he was twenty-one years old, and then returning to Connecticut, entered into partnership with his father at the old stand in Naugatuck, where they manufactured not only ivory and metal buttons, but a variety of agricultural implements, which were just beginning to be appreciated by the farmers. In August of 1824 he was united in marriage with Clarissa Beecher, a woman of remarkable strength of character and kindness of disposition, and one who in after years was of the greatest assistance to the impulsive inventor. Two years later he removed again to Philadelphia, and there opened a hardware store. His specialties were the valuable agricultural implements that his firm had been manufacturing, and after the first distrust of home-made goods had worn away, for all agricultural implements were imported from England at that time, he found himself established at the head of a successful business. This continued to increase until it seemed but a question of a few years until he would be a very wealthy man. Between 1829 and 1830 he suddenly broke down in health, being troubled with dyspepsia. At the same time, came the failure of a number of business houses that seriously embarrassed his firm. They struggled on however, for some time, but were finally obliged to fail. The ten years that followed this were full of the bitterest struggles and trials to Goodyear. Under the law that then existed, he was imprisoned time after time for debts, even while he was trying to perfect inventions that should pay off his indebtedness. Between the years 1831 and 1832 he began to hear about gum elastic and very carefully examined every article that appeared in the newspapers relative to this new material. The Roxbury Rubber Co., of Boston, had been for some time experimenting with the gum, and believing that they had found means for manufacturing goods from it, had a large plant and were sending their goods all over the country. It was some of their goods that first attracted his attention. Soon after this Goodyear visited New York, and went at once to the store of the Roxbury Rubber Co. While there, he examined with considerable care some of their life preservers, and it struck him that the tube used for inflation was not very perfect. He therefore on his return to Philadelphia, made some tubes and brought them down to New York and showed them to the manager of the Roxbury Rubber Company.

This gentleman was so pleased with the ingenuity that Goodyear had shown in manufacturing these tubes, that he talked very freely with him and confessed to him that the business was on the verge of ruin, that the goods had to be tested for a year before they could tell whether they were perfect or not, and to their surprise, thousands of dollars worth of goods that they had supposed were all right were coming back to them, the gum having rotted and made them so offensive that it was necessary to bury them in the ground to get them out of the way.

Goodyear at once made up his mind to experiment on this gum and see if he could not overcome its stickiness. He therefore returned to Philadelphia, and, as usual, met a creditor, who had him arrested and thrown into prison. While there, he tried his first experiments with India rubber. The gum was very cheap then, and by heating it and working it in his hands, he managed to incorporate in it a certain amount of magnesia which produced a beautiful white compound and appeared to take away the stickiness. He therefore thought he had discovered the secret, and through the kindness of friends was put in the way of further perfecting his invention at a little place in New Haven. The first thing that he made here was shoes, and he used his own house for grinding room, calender room and vulcanizing department, and his wife and children helped to make up the goods. His compound at this time was India rubber, lampblack and magnesia, the whole dissolved in turpentine and spread upon the flannel cloth which served as the lining for the shoes. It was not long, however, before he discovered that the gum, even treated this way, became sticky, and then those who had supplied the money for the furtherance of these experiments, completely discouraged, made up their minds that they could go no further, and so told the inventor. He, however, had no mind to stop here in his experiments, but, selling his furniture and placing his family in a quiet boarding place, he went to New York, and there, in an attic, helped by a friendly druggist, continued his experiments. His next step in this line was to compound the rubber with magnesia and then boil it in quick lime and water. This appeared to really solve the problem, and he made some beautiful goods. At once it was noised abroad that India rubber had been so treated that it lost its stickiness, and he received medals and testimonials and seemed on the high road to success, till one day he noticed that a drop of weak acid, falling on the cloth, neutralized the alkali, and immediately the rubber was soft again. To see this, with his knowledge of what rubber should do, proved to him at once that his process was not a successful one. He therefore continued experimenting, and after preparing his mixtures in his attic in New York, would walk three miles to the mill of a Mr. Pike, at Greenwich village, and there try various experiments. In the line of these, he

discovered that rubber, dipped in nitric acid, formed a surface cure, and he made a great many goods with this acid cure which were spoken of, and which even received a letter of commendation from Andrew Jackson.

The constant and varied experiments that Goodyear went through with affected his health more or less, and at one time he came very near being suffocated by gas generated in his laboratory. That he did not die then everybody knows, but he was thrown into a fever by the accident and came very near losing his life. It was here that he formed an acquaintance with Dr. Bradshaw, who was very much pleased with the samples of rubber goods that he saw in Goodyear's room, and when the doctor went to Europe he took them with him, where they attracted a great deal of attention, but beyond that nothing was done about them. Now that he appeared to have success, he found no difficulty in obtaining a partner, and together the two gentlemen fitted up a factory and began to make clothing, life preservers, rubber shoes and a great variety of rubber goods. They also had a large factory, with special machinery, built at Staten Island, where he removed his family and again had a home of his own. Just about this time, when everything looked bright, the great panic of 1836-37 came, and swept away the entire fortune of his associate and left Goodyear without a cent, and no means of earning one.

His next move was to go to Boston, where he became acquainted with J. Haskins, of the Roxbury Rubber Co., and found in him a firm friend, who loaned him money and stood by him when no one would have anything to do with the visionary inventor. Mr. Chaffee was also exceedingly kind and ever ready to lend a listening ear to his plans, and to also assist him in a pecuniary way. It was about this time that it occurred to Mr. Chaffee that much of the trouble that they had experienced in working India rubber might come from the solvent that was used. He therefore invented a huge machine for doing the mixing by mechanical means. The goods that were made in this way were beautiful to look at, and it appeared, as it had before, that all difficulties were overcome. Goodyear discovered a new method for making rubber shoes and got a patent on it, which he sold to the Providence Co., in Rhode Island.

The secret of making the rubber so that it would stand heat and cold and acids, however, had not been discovered, and the goods were constantly growing sticky and decomposing and being returned.

In 1838 he, for the first time, met Nathaniel Hayward, who was then running a factory in Woburn. Some time after this Goodyear himself moved to Woburn, all the time continuing his experiments. He was very much interested in Hayward's sulphur experiments for drying rubber, but it appears that neither of them at that time appreciated the fact that it needed heat to make the sulphur combine with the rubber and to vulcanize it.

The circumstances attending the discovery of his celebrated process is thus described by Mr. Goodyear himself, in his book, "Gum Elastic." It will be observed that he makes use of the third person in all references to himself:

"In the summer of 1838 he became acquainted with Mr. Nathaniel Hayward of Woburn, Mass., who had been employed as the foreman of the Eagle Company at Woburn, where he had made use of sulphur by impregnating the solvent with it. It was through him that the writer [Charles Goodyear who makes use all through his book of the third person] received the first knowledge of the use of sulphur as a drier of gum elastic. Mr. Hayward was left in possession of the factory which was abandoned by the Eagle Company. Soon after this it was occupied by the writer, who employed him for the purpose of manufacturing life preservers and other articles by the acid gas process. At this period he made many novel and useful applications of this substance. Among other fancy articles he had newspapers printed on the gum elastic drapery, and the improvement began to be highly appreciated. He therefore now entered, as he thought, upon a successful career for the future. A far different result awaited him. It was supposed by others as well as himself that a change was wrought through the mass of the goods acted upon by the acid gas, and that the whole body of the article was made better than the native gum. The surface of the goods really was so, but owing to the eventual decomposition of the goods beneath the surface the process was pronounced by the public a complete failure. Thus instead of realizing the large fortune which by all acquainted with his prospects was considered certain, his whole invention would not bring him a week's living.

"He was obliged for the want of means to discontinue manufacturing, and Mr. Hayward left his employment. The inventor now applied himself alone, with unabated ardor and diligence, to detect the cause of his misfortune and if possible to retrieve the lost reputation of his invention. On one occasion he made some experiments to ascertain the effect of heat upon the same compound that had decomposed in the articles previously manufactured, and was surprised to find that the specimen, being carelessly brought in contact with a hot stove, charred like leather. He endeavored to call the attention of his brother as well as some other individuals who were present, and who were acquainted with the manufacture of gum elastic, to this effect as remarkable and unlike any before known, since gum elastic always melted when exposed to a high degree of heat. The occurrence did not, at the time, appear to them to be worthy of notice. It was considered as one of the frequent appeals that he was in the habit of making in behalf of some new experiment. He, however, directly inferred that if the process of charring could be stopped at the right point, it might divest the gum of its native adhesiveness throughout, which would make it better than the native gum.

"He made another trial of heating a similar fabric, before an open fire. The same effect, that of charring the gum, followed, but there were further and very satisfactory indications of ultimate success in producing the desired result, as upon the edge of the charred portions of the fabric, there appeared a line, or border, that was not charred, but perfectly cured.

"These facts have been stated precisely as they occurred in reference to the acid gas, as well as the vulcanizing process.

The incidents attending the discovery of both have a strong resemblance, so much so they may be considered parallel cases. It being now known that the results of the vulcanizing process are produced by means, and in a manner which would not have been anticipated from any reasoning on the subject, and that they have not yet been satisfactorily accounted for, it has been sometimes asked, how the inventor came to make the discovery? The answer has already been given. It may be added that he was many years seeking to accomplish this object, and that he allowed nothing to escape his notice that related to the sub-

ject. Like the falling of an apple, it was suggestive of an important fact to one whose mind was previously prepared to draw an inference from any occurrence which might favor the object of his research. While the inventor admits that these discoveries were not the result of scientific chemical investigations, *he is not willing to admit that they were the result of what is commonly termed accident*; he claims them to be the result of the closest application and observation.

"The discoloring and charring of the specimens proved nothing and discovered nothing of value, but quite the contrary; for in the first instance, as stated in the acid gas improvement, the specimen acted upon was thrown away as worthless and left for some time; in the latter instance, the specimen that was charred was in like manner disregarded by others.

"It may, therefore, be considered as one of those cases where the leading of the Creator providentially aids his creatures by what are termed 'accidents,' to attain those things which are not attainable by the powers of reasoning he has conferred on them."

Now that Goodyear was sure that he had the key to the intricate puzzle that he had worked over for so many years, he began at once to tell his friends about it and to try to secure capital, but they had listened to their sorrow so many times that his efforts were futile. For a number of years he struggled and experimented and worked along in a small way, his family suffering with himself the pangs of the extremest poverty. At last he went to New York and showed some of his samples to William Ryder, who, with his brother Emory, at once appreciated the value of the discovery and started in to manufacturing. Even here Goodyear's bad luck seemed to follow him, for the Ryder Bros. failed and it was impossible to continue the business. He had, however, started a small factory at Springfield, Mass., and his brother-in-law, Mr. De Forest, who was a wealthy woollen manufacturer, took Ryder's place, and the work of making the invention practical was continued. In 1844 it was so far perfected that Goodyear felt it safe to take out a patent. The factory at Springfield was run by his brothers, Nelson and Henry. In 1843 Henry started one in Naugatuck, and in 1844 introduced mechanical mixing in place of the mixture by the use of solvents.

In the year 1852 Goodyear went to Europe, a trip that he had long planned, and saw Hancock, then in the employ of Charles Macintosh & Co. Hancock admitted in evidence that the first piece of vulcanized rubber he ever saw came from America, but claimed to have re-invented vulcanizion and secured patents in Great Britain, but it is *a remarkable fact* that Charles Goodyear's French patent was the first publication in Europe of this discovery.

In 1852 a French company were licensed by Mr. Goodyear to make shoes, and a great deal of interest was felt in the new business. In 1855 the French emperor gave to Charles Goodyear the grand medal of honor and decorated him with the cross of the legion of honor in recognition of his services as a public benefactor, but the French courts subsequently set aside his French patents on the ground of the importation of vulcanized goods from America by licences under the United States patents. He died July 1, 1860, at the Fifth Avenue Hotel, New York City.

Patching Rubber Goods.

THE Boston *Transcript* speaks very wisely of a convenient cement for India rubber by which means a worn spot in overshoes or any rubber articles may be repaired without expense or trouble. It advises one to buy a little red rubber from some dealer in dentists' supplies, to cut it into bits, put into a bottle and cover with chloroform. Where there is a large hole, it further advises that a piece of rubber dam be purchased and that it be put on as a patch. Just where the information for this article came from does not appear, but it is perhaps well to say that there is an easier and a cheaper way to patch rubbers if one wishes to. The easiest way, perhaps, is to take the rubbers to some rubber store, or even to some cobbler and let him get his fingers stuck up with rubber cement, and all for a charge of five or ten cents. If one, however, wishes to have a rubber cement in the house that will do this work, why not get a little piece of massed rubber from any rubber mill—a few cents worth—not red rubber, which contains a large percentage of sulphur, as it has to be cured hard, and quite a large percentage of vermilion which will dry the life out of the cement, and instead of dissolving in chloroform, why not come down to plain, old-fashioned benzine? Instead of using a piece of rubber dam for the patch, which is bound to be unsightly and the wrong color for a rubber shoe, why not cut a piece out of an old rubber shoe and after tearing off the fabric from the inside, roughen it a little, skive the edges, cover it with the cement and stick it on, and have a much less conspicuous patch than the *Transcript* advises? These are merely thrown out as hints. We doubt if it is worth anybody's while patching rubber shoes, and if it is a question of patching a rubber garment or a pair of baptismal pants, it would be better to go to a rubber dealer.

An Important Investigation.

INDIA RUBBER, that most important product of which the United States annually imports over $12,000,000 worth, is to have a thorough investigation. The Department of State at Washington has instructed its consular officers to inquire into the production of the crude caoutchouc in all parts of the globe. In the circular issued by the Department it is stated that the destruction of the rubber tree is beginning to be the cause of uneasiness to our manufacturers and the consuls in the rubber districts are requested to spare no pains in their efforts to secure as full and satisfactory information as possible on this point. No less than nineteen points or queries have to be met by the consuls. Among them are some of vital importance, such as the processes of gathering the crude rubber, the decrease of the natural supply, the cultivation of the rubber trees, plants or vines, and whether such culture has been found to be profitable. Naturally, there are also questions to be answered, such as that of duties on American rubber goods and how our manufactures are regarded in comparison with those of other countries.—*Export and Finance.*

THE supply of India rubber does not increase in the same ratio as the demand for it, says the *Australasian and South American* (New York). "It is inevitable that this staple article must, ere many years, become a cultivated product, and the primitive method of gathering rubber from trees growing wild in forests will give way to more intelligent plans."

A Railroad to the Valley of the Cauca, Colombia.

[Written for the INDIA RUBBER WORLD.]

BY COURTENAY DE KALB.

A RECENT issue of the *Journal of Finance* contains an interesting account of a new railway in the United States of Colombia, a portion of which it appears has already been constructed, and which is to be completed, by a company organized in this country. Mr. James L. Cherry is credited with being the originator of this enterprise and the Colombian government has guaranteed five per cent. on $63,353 per mile. The latter statement would cast suspicion upon the project, were it not that the company frankly avows its intention of constructing only 240 miles of track within the next ten years. The government guarantee will result of course in loading the company with securities, "vales" they call them in South America, which in time will be redeemed, upon a compromise, at a discount ruinous to the hopes of the company, if it ever based any serious expectations upon them. It is not intended to cast aspersions upon a worthy enterprise, but it is time that Americans were learning the true conditions which must be met in dealing with South America. Treasures exist there which will enrich those who seek them wisely and prudently. Furthermore, those who build and own the railroads, which render the vast productive areas of South America accessible, will hold the key to the control of that commerce which is yearly expanding, and which will continue to increase until it stands abreast of the other continents of the world. But it will require wisdom to develop this country aright. It is extremely unlikely that any vast enterprise pushed by the enthusiasm of idealists will result in more than gigantic failure, if, indeed it ever progresses so far as to admit of that. The necessities of commerce will, in time, link together a chain of railways which will become the realization of the Pan-American road. This new Colombian railway may then become a valuable connection, within its limits, between the north and the south. The Valley of the Cauca, which it proposes to enter, is one of the richest in natural resources in the world. Its soil is fertile to the verge of prodigality. Like the famous loess of Germany and China, the harvesting of ages cannot exhaust it. It abounds in mineral wealth. The fame of Antioquia has passed beyond the annals of mining into current proverb,—a synonym for phenomenal richness! Copper abounds; many ores of iron are found; and coal exists at Cali, and at other points farther south, in the higher parts of the valley. The plan to build a road from Buenaventura, on the Pacific coast, to Cali, is an old one. Unfortunately the termini of the new line are not specified, but from the fact that the initial direction is "eastward into the Cauca Valley, a distance of ninety miles," it would appear to be a revival of the familiar scheme of some six or more years ago. The charter is said to authorize an extension of the line northward to the Gulf of Darien, and eastward to the Amazon. The former would open up a country still containing considerable reserves of the *Castilloa elastica*, the tree which yields the rubber exported from Central America, Colombia, and Ecuador. This will be an important benefit. Furthermore the natives of the Cauca Valley have for ages been an agricultural people, and are rather more teachable than the majority of the South American Indians and half-breeds, which gives warrant for hoping that they would systematically cultivate this valuable tree, which in this favored valley attains a development unexcelled in any portion of the continent.

The eastward extension of the line would of course include the city of Popayán, one of the most ancient centres of civilization in South America, which has had communication for centuries by a well-worn trail to Quito. This city, which is the capital of the State of Cauca, has a population of 20,000, is substantially built, and boasts of a handsome cathedral, and a government mint. To the southeast of the city is a cluster of three noble peaks, Sotara, Purace, and Azucar, the two former being active volcanoes. Between this trio is a pass which has been used from the earliest time by the Indians in their excursions into the valley of the Amazon, and this is the gap which the railroad would naturally employ. But having crossed the mountains the road would meet, not the Amazon, but the Rio Içá, one of its northern tributaries. It is needless to say that such a line will never be built. Although the Rio Içá is navigable for large steamboats as far west as Cuemby, only fifty miles from the Andes, the only commerce obtainable at this point would be that arising from the rubber trade on this single river. A road to the head of navigation on the Amazon would be comprehensible, for it would derive business from a large number of tributaries, and might easily become profitable. To extend the road from Cuemby to the Amazon, however, would be a quixotic undertaking on account of the vast number of wide streams which would have to be bridged, or which would occasion the inconveniences of an equal number of ferries, either of which would be fatal to the company making the attempt.

Incidentally it may be worth while to observe that the larger part of Colombia lies east of the Andes. Part of it belongs to the basin of the Amazon, and part is comprised within the watershed of the Orinoco. This region has an average elevation of less than 700 feet above the sea, and is reported by recent French and Italian travellers to abound in rubber, both of the *Castillea* and *Hevea* genera. At present only one of its five great rivers sends rubber to Pará. It is a more virgin wilderness even than eastern Peru, but it will unquestionably become one of our important sources of rubber within a few years, when the increased demand, and the destruction of the *Castilloas*, have made it imperative to open up this vast new area.

AN Okonite cable, consisting of 91 conductors, was placed a year and a half ago between the Western Union building and the elevated station in Centre Street, New York, and is today in perfect condition. This is a most trying position for a cable on account of the heat, etc., and it is believed that few other compounds would have lasted so long subject to such destructive elements.

What That Belt Will Drive.

BY ROBERT GRIMSHAW.

THERE are men who profess to be able—and most of them probably think that they are able—to tell what work a belt is doing, by just casting their eyes over it. Some of them will do this whether they see the pulleys or not; and some of them without knowing whether the belt is in good condition or bad, or anything about it.

There is such a thing as being too smart; and that is one of the easiest ways to be too smart, of which I know. I have seen a belt rated at 90 horse that was carrying 230. The man who rated it had not the slightest idea of how it was joined (it was an endless belt in fact), or if he had, he did not take that into account. He did not know that there was a big idler which gently wrapt it around the small pulley until the tight fold very nearly touched the slack one; and that the pulleys were lagged with endless rubber sleeves.

It is better to rely upon a table made up from data got from actual practice, than to "go it blind." Such a table is here given. It is intended for rubber belts, and will not be good for leather ones, because leather ones under the same conditions will not drive so much. It calls for only single leather lacings. If the belt has stronger fastenings, it will drive more. The belt is assumed to have 180° arc of contact on each pulley; or to have 180° on one and more on the other; for it is the least arc of contact which counts. It is assumed to be ¼ inch thick, or ordinary 4-ply; 3-ply being only $\frac{3}{16}$ inch, will not drive so much, by 12½ per cent. The pulleys are supposed to be cast iron, in good condition. If they are lagged with leather or rubber they will drive more.

The first column gives the width in inches of the belt. The second one, which really might be omitted, is principally for purposes of calculation. The third column shows the number of pounds pull which the belt will exert on the circumference of the pulley under proper conditions; and is, of course directly proportionate to the width of the belt. The fourth column gives the horse power per foot per minute which the belt will drive. Thus if it is a 4-inch belt, it will exert 0.01552 horse power for every foot per minute that it runs; so for 2000 feet per minute, it will carry 31.04 horse power. A 12-inch belt (¼ inch thick) running 3000 feet, will carry 0.06209x-3000=186.27 horse; and running 4000 feet, 248.36 horse.

Of course there need be no trouble about finding out the belt speed in feet per minute. Multiply the pulley diameter *in feet* by 3.1416 and by the number of turns per minute, and the thing is done.

The following is a table of horse power per foot per minute, for various widths of rubber belt ¼ inch thick, laced with single leather lacings and wrapping 180° on cast iron pulleys:

Width inches.	Cross section square inch.	Pounds pull.	Horse power per foot per minute.
1	.25	17.076503	.00618
2	.50	34.153006	.01035
3	.75	51.229509	.01552
4	1.	68.306012	.02069
5	1.25	85.382515	.02587
6	1.5	102.459018	.03105
8	2.	136.612024	.04136
10	2.5	170.765030	.05175
12	3.	204.918036	.06209
14	3.5	239.071042	.07244
16	4.	273.224048	.08280
18	4.5	307.377054	.09314
20	5.	341.530060	.10349
22	5.5	375.683066	.11385
24	6.	409.836072	.12419
30	7.5	512.295090	.15524
36	9.	614.754108	.18629
42	10.5	717.213126	.21734
48	12.	819.672141	.24848

For other thicknesses the driving power is proportionate.

For other arcs, consult a table of multipliers for arcs of contact.

For other widths, proportionately.

The column of horse powers per foot per minute is got by dividing the figures in column three by 33000.

For other fastenings consult a table showing allowance to make for this item.

The Colombian Tariff on Rubber.

THE American minister to the United States of Colombia, Mr. John T. Abbott, has forwarded to the Government at Washington a translation of the tariff law in force in that country, in which the duties imposed are as follows:

	Kilogram.*
Unmanufactured India rubber	$ .40
Shoes and boots of all kinds; life-preservers; materials for making leggings and oil-cloth cloaks that contain neither wool nor silk	.80
Pipes and hose for pumps, drains, and roofs; material prepared for machinery and floors, except pipes for fire-engines, which shall pay 1 cent per kilogram	.05
Corks and bottle stoppers	.10
Elastic for shoes	.60
Uncovered buttons	.40
Manufactured in any form	1.00

Twenty per cent. of the duties on each invoice shall be paid cash. For the payment of the remaining 80 per cent. the Executive Government, as soon as the requirements of the Treasury shall permit it, may grant a delay of one hundred and twenty days, with interest at 12 per cent. per annum, which interest shall be calculated in advance and included in the respective bond to be signed for the whole amount. The payment shall be made whenever the Government may determine. When the duty on any invoice does not exceed $500, no right of delay shall be made, but the payment of the whole sum shall be in cash. The delay may be declined by the importer.

The exports of rubber goods from this country to Colombia amount to about $16,000 a year.

*1 Kilogram = 2.20 pounds.

A POSTAL-CLERK employed upon a train running between New York and Boston is said to have found a practical use for rubber which may prove of interest to the 50,000 other clerks employed in Uncle Sam's railway postal service, to say nothing of the army of conductors, brakemen and baggage masters. The constant jar of the train making this clerk intensely weary, he set his wits to work to discover some way to obviate it as fully as possible. Having once been a shoemaker, his experience in that line suggested the feasibility of fixing his shoes, which he did by replacing the leathern heels with rubber ones. This reduced the jar to a minimum, and increased his comfort in the same proportion that it lessened the jar.

A LATE number of the *Kew Bulletin* has an article on Colombian India rubber. This is said to be the produce of one of the many varieties of *Sapium biglandulosum*. The tree grows at higher elevations than most species and is, in consequence, adapted for a cooler climate.

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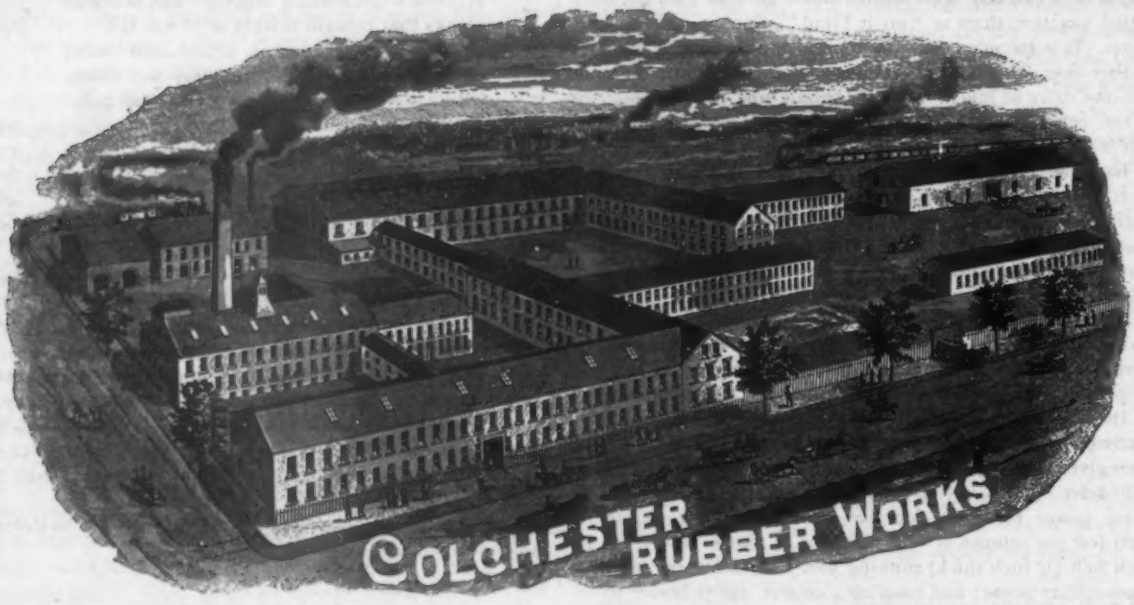

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Hoolihan's Lecture on Rubber.

"So you are going to deliver a lecture on rubber, Mr. Hoolihan?" said a manufacturer, sauntering into the store one fine afternoon.

"Phwat do ye mane?" was the astonished rejoinder.

"Why the bill-boards all over the city have it announced; I supposed you *knew* it."

"Ave its thrue, phwat yur tellin' me—" began Hoolihan, suspiciously.

"One moment," interrupted the other, "come out and see for yourself. There is a bill-board down at the next corner. Let's see what it says!"

"Ahl roight me laddy-buck, an' av yeer foolin' me its a shart toime it'll lasht."

Arm in arm they walked down the street, and paused in front of the board, where to Hoolihan's horror was blazoned in big letters, his own name and the subject to be spoken upon.

"Whwat the thinderation did anny fool do that fur!" gasped the victim. "Sure I can't lecture! I suppoase someone thaught he'd be funny at my expinse?"

"It certainly does look like a joke, but you see the jokers are not known, and the laugh is on you."

"Its on me is it? returned the other aggressively. "By gar I'd loike ter know av I couldn't lecture av I troid! Phere's the man that'll talk fashter than mesilf av I'm mad. I've a moind to do that spache-making on rubber now to spite thim."

"Suppose you do this," suggested the other, craftily. "Pretend that you are flattered by the idea. Get up a little informal talk on rubber and it will be a magnificent advertisement for you."

"But phwat about the hall?"

"Oh that can be easily fixed. This hall named on the bill is not in use the night that the lecture is announced. Now fall right right in with the affair. I am sure I can put my hand on the parties who have sprung this upon you, and you can work with them, and give them a surprise party. If you wish you can make money by charging an admission, and I'll guarantee you a full house."

"I'll do it, soa I will," responded Hoolihan, "but I'll have this oonderthstood. Ahl the tickets come through me. I doant want to make money, soa av the min will paay for the hall I'll issue tickets enough to fill it, and not charge a cint fur thim."

This satisfactorily arranged the pair parted. The next day a committee waited upon Hoolihan, and solemnly told him that they had hired the hall, and the rest was in his hands.

The eventful day came, followed by the eventful evening, and the hall was brightly lighted. In the big anteroom were two large tables, provided with writing materials and piles of tickets of invitation. Tim and several assistants explained to the crowd that each one admitted must sign his full name and address on the ticket, as a guarantee of good faith. The ticket was a showy affair about six inches square, printed on green cardboard, and read:

> Admit the bearer to *Hoolihan's Lecture on India Rubber*. The signer hereby promises to be dacint and paceful and to faithfully perform all that this contract, as now printed, calls for, whether he is able to rade it or not.
>
> _____

There was some demurring at the length of time it took to get the crowd through this performance, but the rules were inflexible, and at last all were in. On the platform sat Hoolihan beside the self-appointed chairman of the evening,—a travelling salesman, of course. When all were seated, the latter arose and, in a flowery speech, introduced Mr. Hoolihan as the most successful rubber man in the country, and an orator as well. At this there was great cheering, in the midst of which the speaker arose impressively:

"Gintlemin and frinds, the elasticity av me constitution doan't allow me to be a very lenthy spache maker. (Applause.) But phwat I doan't know about rubber is hardly worth sakein' fur. Sure from the toime whin it laves its mine in the could, damp ground——"

"Mine, did you say?" asked an amazed reporter from the front seat.

"No, I didn't say yours," replied the speaker calmly. "I didn't say who ownded the mine." (Long continued applause.)

"But, but I thought rubber was the sap of a tree," stammered the reporter.

"So it is, me gossoon, so it is. But lave me tell you this. Av they bore a hole in the tree above ground, the frost will kill it, soa they dig a mine an' tap the roots."

"Hence the term 'tap-root,'" murmured the chairman.

"When they tap the sap from the tap-root does it not sap the tap-root's vitality?" inquired a solemn listener.

"Saay that agin, slowly, plaze."

"In tapping the sap-root, isn't the tap drawn from the sap to the detriment of both tap-root and sap?"

"It do," was the sententious answer, followed by long continued applause.

"Now, me frinds, goa wid me in imagination to a big rubber foundthry. Here amid the smoke, an' stame and bustle."

"Rubber bustle?" asked the solemn man.

"Yes, rubber bustle or *hoop*-skirt bustle, as ye plaze," returned Hoolihan.

"But to continue—enthering the rubber foundthry you come faace to faace wid a large brass kettle twenty fate high and forty fate in circumolcumference. In this the rubber is milted, thousands av pounds at once. Afther the milting comes the pouring, whin the rid-hot rubber is poured out into the moulds to make ahl sorts av mould work."

"Is that why your mackintoshes smell so mouldy?" asked a would-be wit in the front seat.

"You'll know more av my mackintoshes nixt wake than you'll wish ye did," returned the orator, darkly.

"The next thing afther the casting and cooling is the prociss av putting the elashticity into it," continued the speaker. "Whin a slab av rubber comes out av the mould sure its as hard an' stiff as a pace av wood. Thin a couple av min take it and bend it back and forth until it grows flexible. Thin it is put into a masheen that pulls it out to tin toimes its length and then pushes it back again. Afther a while this prociss makes stretchin' and comin' back so natural to the rubber that it does it ahl the toime an' thin it is fit to sell."

And thus the lecture went on, the audience laughing, applauding and questioning, and Hoolihan making the most unique and original explanations of the ordinary methods of manufacture. Finally the time came for the close, and he asked :

"Well, gintilmin, are yez satisfied?"

"We are," was the unanimous reply.

"An' the signatures on the tickets will sthand good?"

"Yes, yes!"

"Thin we will adjourn."

A day later one of the audience dropped into Hoolihan's store.

"I got somebody else's letter, I guess," he said, blandly, "I have ordered no mackintosh here."

Hoolihan dived into his desk and drew out a lecture ticket.

"That is your naame, isn't it?" he said.

"Yes, but——"

"Well, rade the conthract ye signed."

In the space just above his name was printed : "I also promise within ten days from date to purchase a mackintosh of the lecturer, and to pay him not less than fifteen dollars for the same."

"That wasn't there when I signed it!" exclaimed the man.

"I can prove that it was," was the firm answer.

"But, but it couldn't be——"

"Couldn't, by gar! It just could. Sure you bys wanted to maake a fool av the ould man, an' ye thaught ye did it. But now look, see, what the ould man did. He lit yez maake a fool av him, but he *printed the tickets*. Did yez iver hear av sympathetic ink? No. Well, it's ink that bein' printed to-daay doan't show at ahl until twinty-four hours afther. That's phwat I used in the lasht clause, an' me lawyer saays its ahl roight. But doan't you fale bad—sure ahl the rist are in the same box, an' av I doan't sell foive hundthred mackintoshes this wake me name is mud."

RAILWAY stations in Italian cities are filled up as show places. At Milan the station is a crystal palace, with rooms frescoed by Italian masters. The floors are made in such a way that the passengers make no noise in traversing them, and all the vehicles in the neighborhood of the station are built with wheels furnished with rubber tires, so that the only noisy things about the station are the trains which come and go.

Working Up in a Rubber Factory.

BY A FORMER SUPERINTENDENT.

III.

DURING all the years of my experience in rubber factories I took very few notes. Those that I did take were almost without exception records of compounds and heats, and being possessed of a pretty good memory, after a while I had no need to take those, and to-day I am inclined to think that any rubber superintendent who cannot throw away his compound book and go to work and match almost any sample, has not got his business down as fine as he ought to have it. I speak of this lack of notes simply because it is my excuse for having given my experiences in a fragmentary sort of way.

The thing that occurs to me as being next of interest in my adventures as a boy in a rubber mill, was a little episode that terminated rather unfortunately for our foreman, and which came near getting me into serious trouble. Some fifty miles from where we lived was a large rubber factory. In that mill they had certain processes that we were very anxious to secure. We succeeded in hiring away one of their hands who pretended to know all about a machine that we wanted, but when we came to question him, his answers were so vague that his information was worse than useless. It therefore came to pass that our foreman decided that he would slip away and go down there, get into the factory and examine for himself. Whatever possessed him to take me along, I do not know, but take me he did, and one bright frosty morning in the early winter we stepped off the cars at the end of our journey, and going to a little country tavern had a good substantial breakfast. I forgot to say that before this our foreman had sent back the man we had hired, and had made some sort of arrangement with him to let him have a peep at the factory. The day that we reached this town, must have been either Thanksgiving or Christmas, at the moment I have forgotten which. At all events, it was a holiday, and the factory was shut down. We therefore strolled along the street toward the mill, which was situated in rather an isolated spot by the side of a river, and receiving the signal from his man in waiting, that all was right, the foreman told me to stay outside of the gate and he would go in, and that if he needed me for anything he would call me, though what possible use I could be to him was more than I could tell. Sitting down in a cosy nook, where the sun could shine down upon me, I waited for him to return. In the course of ten minutes I heard a shout, and a confused noise inside of the mill, but not knowing what to make of it, I sat still. A moment later I saw a man come around outside of the factory, and shutting the gate through which the foreman had entered, brace a stick of timber against it, and then go around the other side without seeing me. At once I appreciated the fact that the foreman was a prisoner, and darting forward, I pulled away the brace, and just as I did so, a ghostly looking figure sped by me on a staggering run. Had not I recognized his voice, I never should have known it was the foreman,

but when he called, "Run, Tom, run! they're onto the whole business," I saw that he had got into some fearful scrape, and that the only thing for us to do was to take to the woods, and I was not long in following in his wake. Before a great while we reached an open spot in the woods, and hearing no sound of pursuit, sat down to regain our breath, and I dying with curiosity, to find out what had happened. Now that I had time to look at my boss, I discovered that he looked as if he had been dipped in a huge tank of whitewash from top to toe. His natty diagonal suit was covered with a sticky white dough. His hat was gone, and his collar and neck-tie had been so roughly used that the one hung in shreds and the other was crushed all out of shape.

"What happened to you?" I asked, with exceeding curiosity.

"Happened to me," he growled, "the worst thing possible. That confounded Irishman split on me; must have told the boss all about my intended visit, and they were all ready to receive me."

"But what did they do?" I asked.

"Do?" he said, with a string of oaths that almost made me shiver. "Why, this spy led me into a little room that had no windows and only one door, and, stepping back of me, locked me in. Then, from a scuttle-hole up above, they threw five or six pails of water on me, and five or six pails of whiting, and the Lord knows they would have killed me if I hadn't been strong enough to smash the hinges and get out. Didn't ye hear me holler to yer?"

"I heard a noise," I said, with a kind of choking gasp that made him turn and look at me very suspiciously.

"Are yer laughing at me?" he asked.

"No, no," I hastened to assure him, with another gurgle in my throat.

"Confound you, you little scamp, to come down here and laugh at yer boss," at which I just threw myself down on the ground and laid down and laughed until he grabbed and shook the breath all out of me.

I do not think, however, this made him my enemy at all, for in fact before a great while he put on a more philosophical air and laughed a little too.

"Did you see the machine?" I asked.

"Yes; I got a sight of it, and I think I can reproduce it," he replied, with some satisfaction.

At that moment we heard footsteps approaching through the underbrush, and the foreman, feeling a little better and having more confidence in himself, slipped behind a tree and bade me do the same, and we waited. A minute later, very cautiously, came in sight the very man who had toled him into the trap, and he was alone. An expression of grim satisfaction settled over the whiting-streaked features of my boss and I saw him gather up his broad shoulders with a gesture that meant business. When the man got within a few feet of him, he bounded forward like a tiger, and before he could resist, had him on his back, begging for mercy. After various lurid threats that the poor wretch seemed to think meant a great deal, the foreman said:

"How many know about this?"

"The boss an' half a dozen o' the men," was the humble answer.

"Well, what further are they going to do about it?"

"They're going to meet you at the depot, sorr, an' I wud warn ye to go some other way," was the reply.

"What do they intend to do at the depot?"

"I dunno, sorr, but they said they'd make it pleasant fur ye."

The foreman, sitting on the breast of his captive, ruminated a few minutes and then he said:

"Are you well acquainted with the country hereabouts?"

"Yes, sorr."

"Can you pilot me to the nearest railway station below this?"

"Yes."

"Well, lead off and do it, and mind, if you lead me into any trouble, or say a word to any of your friends, I'll have your life," was the savage threat.

To do the man justice, I must say he piloted us in good shape, keeping us away from all chance of meeting passers-by, and, after a six or eight mile tramp, we struck the station below, and, boarding the cars, went on our way rejoicing.

When we got home, further trouble awaited us, for the next morning at the mill the old gentleman, proprietor of the works, called the foreman to his office in a towering passion. He had received a telegram and a letter from the proprietor of the rival factory, who was a friend of his, describing the foreman and myself minutely, though who had seen me was more than I could imagine. Our proprietor was a man of the highest honor and would never tolerate any such tricks as that the foreman had planned. It therefore happened that when the latter tried to argue that he was right and was working for the best interests of the factory, he found himself promptly discharged. The proprietor then wanted to know who his companion was, and unwilling to get me into trouble, the foreman good-naturedly lied and said it was a boy from the village whom he had taken along with him to carry his bag, and not one who was at all engaged in the factory. I did not know of this lie at the time, and supposing that I was under suspicion, spent several weeks in agony for fear the lightning would next strike me.

Our foreman, who was after all a pretty level-headed man, on being discharged, went directly back to the factory where he received his bath of water and whiting and seeing the proprietor told him he was in search of a situation, and was at once engaged at a better salary than he had been getting before. One can easily imagine the wrath of our proprietor when he learned of the treachery of his friend, and what he thought also was the treachery of the foreman, for I verily believe the old gentleman thought that even if his foreman was discharged, he ought to have remained idle rather than to have gone over to the enemy. It therefore happened the machine we wanted a draft of, and the process that we so needed to compete with this other company, was still unknown to us, and likely to be, so far as any information we could secure from the rival mill.

Every-day Work in the Factory.

BY NICK R. AUGUR.

IN every manufactory will be found little simple rules for working that save a deal of time, and should always be a part of the technical knowledge of the rubber worker or machinist. Indeed, the rubber business is full of knacks like that old one known to the country people, that, the putting of a piece of wood into a barrel of water just as it freezes will keep the barrel from bursting open. A little scheme that I saw worked by an engineer in a rubber factory the other day struck me as being one of these homely, simple expedients that practical men think of, use themselves, but rarely attach importance enough to it to publish. The engineer was trying to locate the "thump" in his engine. To do this he went into the factory and got a piece of rubber tube about thirty inches long. One end of this tube he put to his ear and the other end passed over the spots where he thought the thump was. Very soon this little ear trumpet showed him exactly where the knocking occurred, as the vibrations from that part were strongest. Once found, it was an easy thing to remedy. I asked him where he discovered this process, and he said he read it in a paper, which proves that the intelligent engineer is a reader of papers.

A friend asks me for a compound for making frost rubber, and upon seeking further information as to what "frost" rubber is, he produces a piece of black, spongy rubber, such as may be found in the ordinary rubber playing ball. It seems he wants this compound for mould work; that it shall be spongy on the inside, and yet have a good surface.

The first thing in the manufacturing of anything of this kind is to discover what priced compound you want, for the sponge may be made from a high or a low-priced compound. A very good compound for a cheap sponge is:

10 pounds African rubber,
5 " litharge,
25 " either mechanical or chemical shoddy,
1 " sulphur,
3 " damp sawdust,
3 " rubber substitute.

By those who understand the use of carbonate of ammonia, or of crystallized alum, the sponginess may be obtained without the use of the sawdust. However, one should be exceedingly careful in using ammonia, for its expansive force is very great, and it may blow the moulds to smithereens.

A superintendent recently told me of his experience in attempting to handle a little gutta percha. I do not think there is very much danger of the rubber trade using gutta percha largely at the present price, but it will do no harm to give a general idea as to the manner in which it is cleansed and worked. In the first place it is worked up into slices or shavings by means of knives or cutters attached to the face of a revolving wheel. That is, that was the old-fashioned way. The idea is simply to reduce the gutta into small fragments like raspings. These are then soaked and boiled in water that the particles of earthy matter may sink while the gutta floats. During this process a great deal of woolly matter becomes sodden with water and also sinks to the bottom, while all impurities that are soluble in water are pretty thoroughly removed from the gutta. After this, it is very carefully agitated in hot water, which is repeated for some little time, the water being drawn off and fresh hot water poured on, until it seems nearly free from foreign matter. When the gutta has been thoroughly worked and washed, it is often rolled at once into sheets. The English fashion is, however, to put this into a masticator and afterward strain the material, so as to get a thoroughly uniform texture and a perfect freedom from foreign material. Almost every one is familiar with the form of the English masticator. It really does the work that the ordinary mixing and refining mills do, and for the American factories the work can be just as easily done on one of the latter machines. For straining, a variety of arrangements are in use, but an ordinary pattern consists of an iron cylinder, in the lower portion of which is an iron wire netting. The cylinder must be kept warm, and for this purpose is usually jacketed. It is then filled with soft gutta. A tightly-fitting piston is then forced into the upper part, and by a hydraulic arrangement the gutta is forced through the wire gauze. After this, comes the second handling of the material in order to make it more homogeneous. While it is not probable, as I have remarked, that much gutta percha will be used in rubber factories, there are, however, many gums that are neither rubber nor gutta percha, and that are being used more and more for various purposes, and a knowledge of the manner of using gutta percha will doubtless be of advantage to one attempting this sort of work.

Rubber men are always ready to listen to formulæ for tests of the various adulterants that they use. White lead, while it is not as common a component of rubber goods as it once was, is still largely used. A word about its testing that comes from the great paint house of F. W. Devoe & Co. will therefore be apropos.

The principal compounds for adulterating white lead are, first, barytes (heavy spar or sulphate of barytes). Probably nine tenths of all the adulteration in white lead is composed of this material. Whiting is rarely used as it is not economical, nor are plaster of Paris or China clay often used.

To ascertain whether a given sample of lead be pure, put as much as you can take up on the point of a penknife in a glass or on a watch-glass. Pour on it enough nitric or acetic acid to cover it. If it be pure lead, it will dissolve readily and with effervescence. If there be any residue, it will probably be barytes, for both zinc and whiting are dissolved by these acids.

There is another method to determine the presence of barytes and whiting, or plaster of Paris, as follows: Take a piece of iron wire about the diameter of a pin and of any length,—say of from four to ten inches. Make a small loop an eighth of an inch in diameter in one end. Take some of the material to be tested out onto a watch-glass with a penknife and cover it with muriatic (hydrochloric) acid. Then, with the iron loop take up a little of

the mixture and hold it in a gas or alcohol flame. The lead will commence to burn off first with a blue flame. After the lead has been consumed, the barytes will flash out with an unmistakable emerald green flame, and if there be any whiting or plaster of Paris (both composed of lime), they will color the flame a brilliant carmine color. By means of a blowpipe much can be accomplished in detecting adulterations, but it needs some experience to use it accurately. However, a jeweler's blowpipe costs but little and may often be of some service. If it be used with a gaslight, the flame wants to be turned down very low so that there is no force on the gas. The blowpipe must be put close to the flame and blown steadily. This will force out a pointed tongue of gas. A small piece of charcoal is scraped smooth, and a small hole, half an inch in diameter and an eighth of an inch deep is bored out of it, into which the material to be tested is put. The blowpipe flame is then directed on to the material which should readily melt under its heat into bright, metalic lead if it be pure lead; if it be adulterated with zinc, barytes, whiting, etc., it is impossible to reduce it to metalic lead without the use of fluxes.

Bailey's New Catalogue.

THE price list and catalogue of C. J. Bailey & Co., Boylston Street, Boston, Mass., comes to us and we find in it much that is of interest. On the first page is a fac-simile of the rubber bath brush which has gone so thoroughly to every part of the civilized world. On the second page is a cut of a young man who looks like a collegian, who is vigorously using Bailey's Rubber Shampoo Brush. On the third page, in a black rectangle, is asked the startling question, "Have you teeth?" and underneath comes the picture and description of Bailey's Rubber Tooth Brush, and underneath that Bailey's Rubber Teething Ring, therefore if you have teeth or if you haven't teeth, you would get help from this page. The fourth page shows a large cut of Bailey's Toilet Brush, which is so popular among printers, penmen, typewriters, and others, and which, wrapped in the dainty pink paper labelled "Clean Hands," would be recognized the world over. On the next page the graphic call, "Shine, sir?" introduces Bailey's Rubber Dauber, and opposite this is shown the Water-tight Foot-hold. The two pages that follow show syringes and water bottles and a variety of druggist sundry goods, all of which are carried by the Bailey Rubber Co. The last two inside pages are descriptive of stationers' good and certain lines of mechanical goods, while on the last inside page is pasted a neat little piece of double texture cloth fit for a lady's fine garment, and balancing that on the outside is a piece of double texture that would make an elegant gentleman's Mackintosh. The whole catalogue is very neatly gotten up, and is business from cover to cover.

MACINTOSH & Co., Manchester, England, have recently introduced a specialty in water-proof garments, vulcanized by a patent process, which has the effect of preventing the unpleasant smell which has been a great objection in this class of English goods, whilst it also enables them to withstand extremes of temperature without becoming either hard in cold weather or "sticky" in hot weather. In these goods they have brought out several new styles for the current season, which are manufactured to resemble tailor-made garments. Another specialty is the manufacture of bicycle and tricycle tires, which they supply to many of the large Coventry houses. They have recently patented a new style of cushion tire, which has been very well received by the trade, and they are also supplying the Pneumatic Tire Co. with rubber for their tires. Another specialty is foot ball bladders, for which at the present time the call is extremely good. These bladders are manufactured of pure fine Pará rubber, and are used extensively by foot ball clubs both at home and in the colonies. An improved tobacco pouch, to which they have given the name of the "FIFE," is also manufactured of specially prepared fine Pará rubber, and is highly polished, whilst by a patent process of lettering the name or initials of the owner can be put on. Amongst smaller goods they are large manufacturers of children's playing balls, and in these they compete keenly with German houses. They also have in hand large Admiralty contracts for supplying the India rubber valves and sheets for warships, and they export their special goods extensively to North and South America and Australia, as well as to various parts of the continent, having in Spain a house of their own where they make up garments from cloth shipped from England.

Vulcanizing Hard Rubber Plates.

DR. GEORGE B. SNOW gives in *The Dental Record* the following new method of vulcanizing rubber plates, which may contain features of interest to the general manufacturer.

"The *modus operandi* will be as follows: Pack the mould with rubber as usual, and close the flask either with bolts or a flask-press, as may be preferred. Before putting it in the vulcanizer slack off the bolts sufficiently to allow the flask to open when the rubber expands by heat, so that it will not be forced into the gateways. After it is vulcanized let it cool slowly until there is no steam pressure upon it; then remove the flask, place it in the spring clamp, replace it in the vulcanizer and re-heat it to 320°, and allow it to cool slowly. It is *always* best to keep the flask in the clamp and under pressure until cool.

In this case the mould contains more rubber than it would if held firmly, by the amount which would have been forced into the gateways by expansion as the heat was raised to the vulcanizing point; and this amount is sufficient, or nearly so, to completely fill the mould while hot and after vulcanization. The rubber is harder and not quite so tractable as when partly vulcanized, and the process requires more care and attention than is required with a vulcanizer capable of pressing the flask at the proper time while vulcanizing; but the operator is thus enabled to test the theory herein set forth, and to satisfy himself of the benefits to be secured by putting it into practice.

This process may be varied by first vulcanizing the plate about three-fourths the usual time; then applying the pressure and re-vulcanizing to finish.

The following precautions must be observed. Any sudden change in the steam pressure may result in the formation of steam in the flask, and injury to its contents; as it is not held together as it usually is. Therefore, no escape of steam by opening the blow-off, or blowing out the safety disk, should be allowed. Neither should the vulcanizer be suddenly cooled by putting it in water, or otherwise.

It is believed that the results obtained will amply repay the operator for what little additional trouble he will incur in using this method of vulcanizing."

MR. JULIUS LEHMAN, of New York, agent of the Hanover Vulcanite Co., has gone to Europe for a two months vacation.

Trade Notes.

THE new store of the Metropolitan Rubber Co., at 49 Summer Street, Boston, is proving a remarkable success. Situated as it is in the fashionable shopping district, it is catching the fine trade in both ladies' and gentlemen's mackintoshes, and aside from this is doing quite a business in the general trade that every rubber store is entitled to.

—Just before the recent foot-ball match at Springfield, Wright & Ditson, of Boston, were called upon to furnish fifty of the $5 Rugby balls to decorate the hall in Springfield where was given a ball in honor of both the Harvard and Yale students present. The Wright & Ditson ball was also used at the great game, and perhaps the fact of its being a Boston ball helped the Harvards in winning their great victory.

—The Tyer Rubber Co., of Boston, Mass., have made a very wise move in having their goods put upon the premium lists of the various magazines, which results not only in a great many sales, but in a deal of good advertising.

—Mr. H. M. Lindeblade and Mr. Adams, of Toronto, Can., both of them rubber men, visited the office of THE INDIA RUBBER WORLD recently and chatted very pleasantly on various rubber topics across the line.

—The use of the rubber tip upon chair legs has long been known, but upon workshop tables it is something more recent. It is said that in a factory where there are nearly a hundred coppersmiths who are constantly hammering at their metal, the noise can hardly be heard in the room below, because on each table leg is a substantial tip of India rubber.

—In front of the great brick plant of the Trenton Oil Cloth Co., are to be seen a great many horse car rails bent almost double, which at once provokes the inquiry as to the cause of this sight. The Trentonian, as a rule, tells the story about them with great gusto. It seems that two rival horse car lines were striving to run their tracks over the same street out to the fair that was held there recently. One company, in which the president of the Trenton Rubber Co., Mr. Frank Magowan, is largely interested, had already laid their tracks when the rival company began laying their rails inside of the rails first laid. Mr. Magowan, believing that heroic measures were called for, sent some of his men out with a couple of teams of stout mules, hitched a chain around the rails and pulled them out, short metre. The affair was then taken to the civil courts, which of course was what was expected, but nevertheless the rival horse car line did not get their cars out to the fair in time to do any business.

—It seems the Columbia Rubber Co., at East Braintree, has graduated a prize fighter. A Mr. Griffin recently had a set-to with a Mr. Hubbard at the Ajax Club, and Griffin came out winner. But a few short months ago this same Griffin was a workman in the rubber factory at East Braintree and was thrashed by an ex-prize fighter. This awoke his pugnacity so greatly that he began to practice until he became quite an expert in the use of his fists, and is to-day looked upon by sporting men as quite a promising pugilist.

—A very pleasant note comes to us from the president of the Missouri Rubber Co., Mr. Walter D. Walsh, in which he says: "The weather here is first-class for the rubber business, and it of course makes our hearts glad accordingly." When the rubber trade is glad, THE INDIA RUBBER WORLD is of course joyous, and we trust that all over the country not only the clothing, but the boot and shoe, and the mechanical goods men are feeling happy over the business which is to-day being done and in sight.

—In the office of the Star Rubber Co., at Trenton, is a phonograph. As a rule, the waxen cylinders in their swift revolution will give the listener the contents of numerous business letters. If, however, one should pick out the right cylinder, instead of a commercial communication will come the well-known song, "Rocked in the Cradle of the Deep," and sung very finely indeed. One might question a long time without finding whose voice it is that is so well reproduced, were it not that Mr. Bell, the secretary of the company, is very fond of music and is possessed of a most musical voice.

—The Institute of Technology during the last season tried a number of experiments with the milk-weed with a view of ascertaining how much caoutchouc is to be found it. The experiments however, were not wholly satisfactory and will probably be continued another year.

—Quite an amount of rubber clothing of American manufacture is being sold across the border, and this, too, in spite of the duty and in spite of the Canadian factories which manufacture a fine grade of rubber clothing.

—Mr. Turner, so well known as one of the members of the Blake & Knowles Pump Co., gave up active interest in the corporation because of ill health. He is far from looking unwell, however, and in response to a remark to this effect, said:

"That's just it. It's one of the worst things in the world to be sick and to get no credit for it. Now I remember when a boy, just after a fit of sickness I had managed to stagger out of doors and was walking slowly along, when a kindly old gentleman came up to me and slapping me on the shoulder, said, "Ah, here's a nice healthy looking little fellow. I'll bet you this boy never is sick."

"I tell you," said Mr. Turner, emphatically, "when a man is sick, it is a great satisfaction to look so and to have other people appreciate it."

—Quite a number of manufacturers are looking with more than ordinary interest at the insulated wire manufacture as something which belongs to the rubber business and something that they may be induced to take hold of.

—Mr. O. W. Clary, of Syracuse, N. Y., has one of the oldest retail rubber stores in the trade, having been twenty-three years in the business—most of the time in the one store. Mr. Clary is a gentleman upon whom all the travelling men like to call, for while they do not always get an order, their reception is so courteous and genial that they depart pleased with themselves in particular, the world in general, and considering Mr. Clary the best fellow in it.

—Mr. W. H. Corner, Jr., of the Boston Rubber Co., has filled a large scrap book with testimonials from his customers as to the merits of his Westchester all-feature coat, and points with pride to the fact that he has letters from most of the leading houses in the trade to that effect. Mr. Corner is the proud possessor of a handsome silver-headed cane on which is engraved his name and the words "El Rio Rey." We presume that this cane tells a tale of his winnings, the result of backing this noted horse.

—Among the arrivals on the S. S. *Majestic*, and a fellow passenger of Henry M. Stanley, was Mr. James Warren Lane, of J. H. Lane & Co. Mr. Lane was accompanied by his charming bride, having returned from his wedding trip to Europe. His many friends in the rubber trade extend them their wishes for the continuance of their present prosperity and good luck.

—All the carriage drill manufacturers were represented at the annual letting of the carriage drill contracts at Cincinnati during the second week in November. Joy, Langdon & Co., L. Joy & Co., The Boston Rubber Co. and the Goodyear Rubber Co. appeared to be among the most successful bidders.

—"From the Forest to the Foot," is the title of an unusually beautiful and instructive brochure published by the Boston Rubber Shoe Co. The book is exceedingly well written, and full of information that all should possess. It contains nearly fifty illustrations which are beautiful works of art, and are from the pencil of no less a distinguished artist than H. C. Brown. The natural divisions of the book are, first, "From the Forest to the Foot"; second, "Discovery of Vulcanizing"; third, "The Home of the Rubber Gatherer"; fourth, "Progress." Any one applying to any retailer of rubber boots or shoes will secure this book, free of cost, and with it secure an exceedingly interesting *résumé* of the processes of rubber gathering, preparing and manufacturing.

—The Chalk Rubber Co.—in answer to an inquiry—is so called because it was founded by a young man whose surname is Chalk. The surmise, therefore, that the goode are of rubber and chalk, chiefly the latter, or that they are chock full of any kind of compound is wrong.

—There is without doubt a genuine call for some sort of shoe string that can be fastened quickly, without a long and careful tying. Perhaps some inventive genius will utilize some rubber arrangement for this, as has often been suggested. How much time is lost in tying shoe strings the managers of a large Eastern knitting mill are said to have found out to a nicety. They averaged the fact that the shoe strings of their girls become untied about three times a day, and the girl loses fifty seconds every time she stoops to tie them. As almost all the girls in that factory are blessed with two feet, this means a loss of 300 seconds per day for each girl. As they have 400 girls in the factory the loss is 43,800,000 seconds per year, and at the rate that they pay the girls this would be $943.17½. Orders have therefore been issued that all girls must wear either button shoes or congress gaiters, under penalty of discharge.

—An imaginative reporter of the Cincinnati *Commercial Gazette* on the 22d ult., gave elaborate particulars of a large India Rubber enterprise which was soon to be established in Cincinnati, going so far as to give particulars as to the dimensions of the building, the number of hands to be employed, and the date when manufacturing would begin. An inquiry from us through Messrs. A. C. Cattell & Co., develops the fact that there is no truth whatever in the report.

—The plant of the Brown Rubber Co., in Providence, R. I., has finally been sold, the purchaser being Mr. Eugene Phillips, the proprietor of the American Electrical Works. Mr. Phillips is the manufacturer of a fine grade of insulated wire and has been in the past getting his rubber compounded for him. It is now his plan to utilize the Brown factory for that purpose. The plant is quite a valuable one, containing four grinders, a calender, dry heaters, etc., and a large amount of land around it. The exact price does not transpire, but it is known that Mr. Phillips some time ago offered $12,000 for the plant, so it is wisely guessed that the figures stand somewhere in that region.

—Messrs. Henry Werner & Co. have recently opened a jobbing house at No. 121 Jefferson Avenue, Detroit, Mich. They have the exclusive agency in that city for Bailey's patent rubber brushes and the patent Champion buggy and carriage aprons. They represent in a larger district, the Meyer Rubber Co.'s foot wear and the New Jersey Rubber Shoe Co. Besides they are handling oil clothing which is manufactured expressly for them. They claim for their Wolverine brand that it equals any made in the United States. As these gentlemen have been in the business before and are able to refer to some of the best known houses in the country, they will no doubt be able to secure for their Michigan Rubber Goods Depot their full share of business.

—John W. Gray is putting quite an addition on his mill at Parkville, Conn. He, at the present, is working upon bicycle tires almost entirely.

—Mr. Walter Marshall is the proprietor of a hardware store at Princes Bay, Staten Island, N. Y. He has just completed an addition to his store and will put in a stock of heavy rubber boots and clothing and other supplies adapted to the uses of the oystermen of that place.

—It is not generally known, perhaps, that the elephant, on coming in contact with civilization, is very apt to ape the manners of its masters. A case in point occurred not long ago in the Philadelphia Zoological Gardens where one of the keepers found three of his elephants chewing gum, and that with as much enjoyment as any giggling schoolgirl could ever have shown. He was puzzled for a moment to find out where they got their quids, but it was only for a moment, for in looking around he missed his garden hose and discovered that the huge animals had gotten away with fifty feet of it, which they divided up among themselves and chewed with the greatest gusto.

—The Clifton Rubber Co. have shown a deal of wisdom in locating their making-up department directly over the laboratory of a perfumery factory. In this way the pleasant fumes from the Lady Gray Perfumery Co. permeate their ladies' gossamers, and that, too, without cost to the company. Is there not here a suggestion for a consolidation of manufacturers' plants which shall in no way interfere with the business of either, and yet at the same time be an advantage to both, in other words, a utilization of what is known as the "by-product?"

—The old firm of Stephen Ballard & Co. have changed their firm name to the "Stephen Ballard Rubber Co."—No change in the members, capital, etc., is made.

—Messrs. Archie Wheeler & Harry Arnold of the Fairfield Rubber Co., were enthusiastic spectators of the Yale–Princeton football game on Thanksgiving day.

—S. Priess & Son have opened a new rubber store in Cincinnati, Ohio, a branch of their Baltimore House.

—The Candee Rubber Co., of New Haven, are already at work upon the enlargement of their plant which was projected some time ago. The new buildings will add 80,000 square feet to the floor area of the mill.

—Fred A. Denny, for the past seven years head salesman for E. G. Studley; W. B. Jarvis, lately bookkeeper for the same house; Felix Raniville and John Coffee, have formed a co-partnership, and will open a wholesale and retail rubber goods and mill supply store, at Grand Rapids, Mich., probably about the first of January. The Barnhart block at the corner of Canal and Huron Streets will be leased if satisfactory arrangements can be made. The name of the new firm will be Denny, Jarvis & Co.

—Mr. Frank W. Green, the well-known broker in Africans and Centrals, has taken a suite of handsome offices at 64 Pine Street, New York.

—Messrs. H. B. Williams and James H. Dewson have formed a copartnership under the firm style of Williams & Dewson, for the purpose of manufacturing the popular rubber hat formerly controlled by Barker & Co., and added to this they will make a handsome line of fine silk and wool clothing and ladies' garments. No. 8 College Place is where they have established their factory.

—Work is progressing finely in the construction of the new rubber mill at Jonesboro, Ind., the third story of the building being about finished.

—The Boston Woven Hose Co. are erecting a large brick dry house on the Hampshire St. side of their plant in Cambridgeport. It is to be used for the drying of crude rubber.

—The large office force of the B. F. Goodrich Rubber Co., of Akron, Ohio, will be elegantly housed by the first of the year, as it is then that the new office buildings will be finished.

—That little instrument known as the roller and its twin the stitcher, both of which are so deftly used in the making-up of rubber goods, are largely furnished by Wood & Willard, of Marlboro, Mass. When one thinks of the thousands of hands employed in making boots, shoes, clothing, sundries, and mechanical goods, the company who make a roller and stitcher for each worker must have a good thing.

—A most enjoyable entertainment was given at the works of the Lycoming Rubber Co., in Williamsport, on the 19th ult., in the shape of an elegant banquet and ball in which all of the employés of the company took part. Some 400 persons were present and from first to last it was a notable and memorable occasion in the city of Williamsport. Mr. S. N. Williams, the secretary and treasurer of the company, gave general directions, and the details were in the hands of a committee composed of the employés in the factory. The occasion was in celebration of the reorganization of the company, who have just taken out a charter for a capital stock of an even half million of dollars. A few days after these festivities, a meeting of the stockholders was held and all of the old officers were re-elected. May prosperity continue with you, gentlemen.

—Peoria, Ill., and her neighboring sister city of Galesburg, are just now in the midst of a warm rivalry to secure the location of a large rubber plant, the promotors of which are in negotiation with the citizens of each place. Galesburg has come forward with a subscription of $50,000 to the capital stock of the concern, and the indications hence point to her triumph.

—The splendid plant of the New Jersey Rubber Shoe Co. is described and illustrated in a two-column article in the New Brunswick *Fredonian* of a recent date, the perusal of which gives the impression that New Brunswick is very proud of this institution, as she has need to be, the capacity of the plant being 15,000 pairs of boots and shoes per diem.

—H. M. Royal, the proprietor of the Royal Rubber Co., of Newark, N. J., reports that the rubber trade is very good, and notwithstanding the fact that he is so near to New York, he finds that he gets his share of the trade.

—The Home Rubber Co., of Trenton, have just put in a 300 horse-power Berryman heater in their enlarged plant. Their new factory buildings, by the way, are completed and are now awaiting the new machinery which is beginning to come by the car load.

—Mr. Joseph Whitehead, president of the Hamilton Rubber Co., of Trenton, has just returned from a trip to Chicago, and looks far from fatigued by the journey.

—Murray, Whitehead & Murray, of Trenton, have just equipped their factory with the Miller Fire Extinguisher. Speaking of their mill with its recent additions, it is well perhaps to announce that the veracious engraver who is getting up the picture of the whole plant is living up to the reputation of his trade and is behind time with it.

—The splendid illustration of the great plant of the National India Rubber Co., which appears on our front cover this issue, cannot fail to attract attention and command admiration. It is a splendid specimen of the engraver's art and it displays the proportions of this enormous plant in a way that is sure to impress the thousands of rubber goods buyers who receive THE INDIA RUBBER WORLD, and who cannot fail to see this striking announcement.

—The new rubber company at Lambertville, N. J., has been confronted by unusual obstacles in the erection of its plant. The pit for the turbine wheel was sunk more than 35 ft. and large quantities of water from natural springs have been continually flowing in, much to the hindrance of the workmen. It takes a pump capable of throwing 2000 gallons of water per minute, to keep the water out.

—Mr. A. P. Cochrane will remove his family and home from Pittsburg to St. Louis, where he goes to take charge of the South Western depot of the Revere Rubber Co.

—The South Framingham, Mass., *Gazette* says several labor organizations of the village have recommended to members that in buying rubber goods, the Pará product be given a preference. Dealers in town have been notified of this action.

—*Boots and Shoes* says: The Colchester "Adhesive Counters" have created such a furor in the business that much has been said against them by parties using old style goods. Kephart Bros., of Berrin Springs, write the Colchester Co.: "We were told that the rubber lining would take the kid off of a fine shoe, but we have found out different." This would seem to settle that point as far as Kephart is concerned, and no doubt others could testify as favorably in regard to the Colchester "Adhesive Counter."

—It was inadvertently stated in these columns recently that the capaci y of the new Alice Mill of the Woonsocket Rubber Co. was 8000 pairs of shoes per day. The fact is that its capacity is 30,000 pairs, that of the Millville, belonging to the same company, being 8000 per day. Such a capacity as the Alice Mill has, is one that there should be no mistake about, and we are very glad to emphasize the fact.

—The Boston Belting Co. sent last week $4000 worth of belting along with a lot of mining machinery to Japan, the consignment going by the way of the Pacific coast.

—Mr. E. E. Leach, the manager of the Boston branch of the Metropolitan Rubber Co., is a photographer of no mean ability. Some large photographs of the interior of the Boston store are taken so well that the advertising prints on the walls are accurately read. The store itself has a pleasing interior with its goods tastefully arranged, its nicely carpeted floors, its show cases, etc.

—Mr. G. L. Richards, of the Boston Rubber Shoe Co., was recently elected a member of the Common Council of the city of Malden, Mass. We had it on the tip of our pen to say something flattering in this connection, but the boot and shoe papers have gotten there first, and used the very adjectives we wanted, so we forbear.

—There are nearly 1000 operatives employed in the Woonsocket Rubber Company's Alice mill, over 500 of whom are girls. Quite a large number of new help employed are operatives discharged from the Harris Woolen Company's Main Street mills, which concerns are in part and will soon be entirely shut down. The starting up of the rubber works at this time is of infinite advantage to this class of help, who would otherwise be out of employment. It is stated on good authority that the whole number of employés in the Alice Mill will reach 3000 when all departments are running in full blast.—*Woonsocket Reporter.*

—The Bowers Rubber Company has been incorporated at San Francisco. The directors are Henry Pierce, William Frederick Bowers, William Pierce Johnson, James F. Hough and Charles O. Bowers. The capital stock is $300,000.

—Wood & Willard have purchased the entire outfit of the Northboro rubber mills, Northboro, Mass., including engine, boiler, machinery and shafting, and will use a 60-horse power boiler of the same for their new machine shop.

A Trifle Gossipy.

THE wave of anti-protection sentiment which has swept over the United States since the passage of the McKinley bill, and which has found expression in the elections just past, naturally created a good deal of comment in rubber trade circles, and started not a little speculation as to what the ultimate outcome of the issue will be. I happened to be in conversation recently with a man who is entitled to rank at the very fore front of the trade in the manufacture of mackintoshes and rubber clothing; and asking his opinion as to the ultimate effect of the election upon the trade, I got a reply which is not only worth printing, but well worthy of solid reflection.

Said he, "I do not care to be quoted in the matter, because if I were I would be hounded out of the company that I am in; but I do want to say that I think the movement on the part of the rubber clothing manufacturers to secure the additional, or rather prohibitive, protection which was granted in the McKinley bill, was a piece of the biggest foolishness that I have ever come in contact with in all my experience in the trade. There is not an industry in the United States that has grown as rapidly or made more money than the clothing branch of the rubber trade; and there is not another branch that is more able to stand squarely on its own feet in competition with the whole world. With the duty where it was previous to the passage of the McKinley bill, we had all the protection that anybody could reasonably ask for; and in addition to that, we were competing against a plan of systematic undervaluations by certain importers that really put us upon a footing of absolute free trade with English manufacturers, for the undervaluation at which certain classes of foreign goods were admitted really made no practical difference to us. Now, had matters been allowed to stand as they were, and had we concentrated our energies upon stopping these fraudulent undervaluations, and made no further demands upon Congress, there is no question but that we would have enjoyed for years to come the full benefit of all that protection can do for any of us. But now we have gone before Congress pleading for more, got the reputation of being piggish, secured a rate of duty which is ridiculously high, —prohibitive in fact—and now, when the back-set comes, you may depend upon it, the rubber clothing trade will be the first to suffer the ill effects of a sudden and radical change to the other extreme. Of course a change is some time off, for no matter how Democratic the House may be, the Senate will be Republican for some years to come; but at best we can look forward to pretty rough treatment when the change does come, and the longer it is delayed the more radical the country will become upon the subject."

I went off pondering this statement of the case, and thinking there was a good deal of wisdom in what my friend had said, when within half an hour I picked up a leading Democratic newspaper published at Grand Rapids, Mich.,—up there in a country where so many gum coats and rubber boots and shoes are sold—and this is the leading editorial which met my eye:

"The 'melancholy days are come,' and rain, and sleet and snow are in the air. Gossamer coats and rubber coats are in demand. On clothing, of which India rubber is a component material, the duty is 50 cents a pound and 50 per cent. ad valorem. Senator Carlisle, discussing the provision of the McKinley iniquity, says: 'I am advised that one of these garments for men's wear weighs about 4½ pounds, and that two pounds of this is rubber and the remainder of the material cotton. Rubber is free and raw cotton is free, so that the whole duty which is given by this bill is a protective duty for the exclusive benefit of the manufacturer. There is no justification whatever for this excessive rate of duty in view of the fact that the manufacturer gets all of his material free except the buttons and the thread, if any thread is used.' The street car drivers, workers around lumbering establishments, switchmen and brakemen on our railroads, the sailors on our lakes and boatmen on our rivers, and, indeed, all classes of men engaged in out-door employment, if they wish to protect themselves against the storms of the season, can have the privilege of buying a rubber coat of a manufacturer who is protected by a specific duty of 50 per cent. and an ad valorem one of 50 per cent. This is 'protection of American labor!'"

No rubber manufacturer or common-sensed business man can be blind to the fact that the publication of this kind of literature in a district where people are users of rubber goods is certain to make anti-protection voters out of the staunchest followers that the Republican banner has had in the past. And thinking so, I could not but confess that my friend's view of the case was a very level headed one. In fact, what every industry needs above everything else is to be let alone by the politicians. No matter how much they pretend to give in the first place, in the end it will be an expensive advantage.

But there are two sides to every question, and a man doesn't have to travel far before he discovers that there are broad-sides to this tariff issue. With my mind full of what I have just related, I dropped in on a gentleman who has the reputation of knowing as much about fine clothing as any one in the world, and who is also full of a genial good nature that makes him hosts of friends.

"Was the increase in the tariff a necessity, or only a successful grab at all in sight?" I asked.

He looked at me benevolently, and replied:

"If you owned a rubber mill, and there were fifteen large houses in your city using the kind of goods that you manufactured, you would feel that you ought to get your share of that trade, wouldn't you?"

"Surely."

"Well, suppose you could sell only one of those houses, and that in a small way, wouldn't you try to find out who did sell them?"

"Every time."

"Now suppose you found that the fourteen whom you couldn't sell, no matter if you put your goods down to cost, bought English goods, what would you hanker after?"

"Protection?"

"Exactly; and that was my case. My workers must be paid a certain price. The foreign labor amounted to next to nothing, and strive as I might, I couldn't meet it."

"What was the difference?" I asked.

"Here is an example. A certain garment that I manufacture I paid my help $1.75 to make. The same garment made by the foreign "sweating process," that is by poor people in filthy attics and cellars that they call houses, costs 45 cents. You see that the foreigner could beat me, don't you?"

A day later I called upon another gentleman who is a genius in getting at the best markets and supplying just what there is a call for.

"Does the extra protection help you any?" I inquired.

"It's my salvation," he responded fervently. "My trade was being cut into frightfully, and I was powerless to prevent it. The foreigners had got onto my styles and were quoting figures that I could not meet. Now, when the goods that were imported in anticipation of the passage of the bill are gone I can do some business."

"I suppose prices will go way up and the consumer will be obliged to pay much more for his rubber goods?" I ventured.

"Not a bit of it. The competition between the different American mills will always keep the price down. If you don't think this bill a good one for the laborer, just look around the country and see the factories that are starting up. What the laborer wants first is *work*, not foreign prices. As far as the rubber business is concerned, the new duty on clothing and the getting it put on the bill is one of the most brilliant things done for years. Some fear that the tide will set the other way, and the duty be taken off? Don't worry about that, my boy. The American laborer is not a fool, and after he finds our mills running full time for a year or two, and he has his pocket full of money, he won't be in a hurry to give up his work to the sweat shops of London."

So the story goes. And I guess the only way to settle it is to let these manufacturers with conflicting views fight it out among themselves.

"Pará," said a resident officer of the Booth steamship line the other day, "is not a very healthy place. It is 80 miles from the Atlantic, and the Amazon at that point has a breadth of about 35 miles. The people, hot as the climate is, are very fond of dress, the conventional black coat and hat with snow white ironed vest and trousers with fancy boots being demanded of every one who has any pretence to a social standing. This, in a climate where a week's absence of rain is styled a drought, is a good deal of a bore. Much jewelry is affected, more or less valuable, particularly the latter. The water for drinking purposes is full of a peculiar sediment, which filtration will not remove. Sanitary conditions are very bad, open cesspools being a common accessory to the back yard. Rubber districts are proverbially unhealthy, and the Amazon valley is chief among them in this respect. I went up the Amazon to within 200 miles of its source, spending five months in that country, barely escaped with my life, and although it was over three years ago, I was not a well man until this spring. The Amazon valley is fertile enough to support a dozen densely populated nations, and yet the people import almost everything they use. That is why we take more freight in bulk to them than we obtain. A great deal of jerked beef is used there, and they have a whiskey distilled from cane that is a powerful intoxicant. The people practically cultivate nothing, and make nothing.

The Amazon valley has about the same temperature day after day, with warm and almost daily rains. There are no dews until the Rio Negro is reached, where they are very heavy. On that river, as well as on the upper Amazon, the forests are dense, moist and impenetrable.

Drench the atmosphere on the lower Mississippi over and over again, and you have some idea of the climate of the upper Amazon. It is a great country, but we have lost three fine business men down there, and our experience is not an unalloyed one in its pleasant recollection."

The harmless practical joke appeals to the true American, be he professional or business man. One that was genuinely funny was brought about through a visit to Colchester by Mr. Sage, the well-known agent for the Candee and Colchester goods. While there he saw a base ball game, in which Irving Watkinson, the son of the president of the Colchester Rubber Co. did some heavy batting. On Mr. Sage's return to Boston he had a mammoth bat made, eight or nine feet long, and packing it in a skeleton crate, sent it to the young man. The huge bat, and its unique inscription which all could read, caused a deal of merriment, which had hardly died away when Mr. Sage was the recipient of a crate that turned the laugh toward him. To digress a little; it is pretty well known that the big boot jobber is a most enthusiastic fisherman. His crate therefore contained a fish—and such a fish. Fully six feet long by three broad, made of a huge pine plank, and bearing an inscription that hundreds read and enjoyed: "To William Lincoln Sage, the man who has fished more and caught less than any other man in Massachusetts. This memorial is respectfully dedicated in remembrance of his many great catches by hook and by crook—(principally by crook). This is not a chestnut, but a pine plank shad. May his shad oh never be less."

The Insulated Wire Outlook.

MANUFACTURERS of insulated wire notice a decline in business during the past two or three months, which makes them believe that the industry for the time being has reached its maximum. Electric light plants have, within the past two or three years, been placed in almost every small town in the country, and they have all been very much inflated. The money panics of the past two or three months, have brought the promoters of these schemes to a sense of conservatism, and the demand for wire has fallen off perceptibly.

As soon as the financial skies clear a little the demand from power companies will probably be renewed, as this branch of the electrical business has not been overdone. Almost every large building nowadays is wired for incandescent lighting, and the demand from this source is continuous, varying in volume with the building industry. Underground work is very limited in extent, only being used in large cities, and that under compulsion.

Telegraph companies are conservative in their extensions, keeping up only a moderate demand.

Letters to the Editor.

An Attractive Show Window.

EDITOR OF THE INDIA RUBBER WORLD: We have lately had a good drawing card as a curiosity in our show windows, a ladies pure gum rubber as worn in 1837. Alongside of which we have all the modern styles of the rubber manufacturers' art of to-day.

Since placing this in our window, several old citizens have called in and shown us some relics of rubber footwear of over fifty years ago, forming a wonderful contrast with the present make of goods in the rubber line. People will block the sidewalk in front of our window to see the exhibit and as a natural result trade is benefitted. This with one large rubber tree forms a good window attraction, which sets off finely a careful arranged window of every variety of rubber goods manufactured.

AMERICAN RUBBER STORE.

St. John, N. B., Canada, Dec. 10, 1890.

Vulcanizers for Stamp Work.

EDITOR INDIA RUBBER WORLD:—Will you kindly send me the address of parties making vulcanizers for rubber stamp work?

J. L. PFEIFFER, Leavensworth, Kan.

[Address S. W. Reese, 182 Fulton Street, New York, or F. W. Dorman, German Street, Baltimore, Md.]

A Cement for Hard Rubber.

EDITOR INDIA RUBBER WORLD:—I am making an experimental model in which I am using several pieces of hard rubber in sheets 1-64th of an inch thick, and I wish to cement two or three thicknesses of it together as strong as possible without increasing the thickness of the rubber. I noticed recently several different formulæ for cements, and in trying to determine which of them was best suited to my wants, I was a little puzzled to decide. I finally tried this one: Dissolve shellac in ten times its weight of water of ammonia. After standing four weeks I find the shellac does not dissolve. What is the trouble? Should it have been cut in alcohol first? I would like also to ask if there is any better formula that I could use especially without having to wait three or four weeks to be ready for use, and should the polished surface of the rubber be cut down with fine emery flour or paper first, or will cement hold fast without doing so? CLEVELAND, O.

[The problem that the gentleman proposes is not an easy one to solve, for cements that will hold hard rubber, and hold it strongly under all conditions, are not compounded every day. It would seem that the better way for fastening the sheets together would be by tiny brass screws, which can be easily had and will hold it perfectly. The shellac dissolved in water of ammonia is not what is wanted for this purpose. A thin film of gutta percha put on and warmed until it became a binder would give a much better result, and it would be quite lasting,—if the finished article is not to be kept in a warm place. It would be necessary to buff the polished surface of the rubber in order to give any sort of cement a hold. The formula given in our article on cements for marine glue would undoubtedly fill the bill, but it is a trifle troublesome to make, and should be allowed to stand some little time to digest. If our friend can use the metal screws or the gutta percha film, it will be his easiest way out of the difficulty.]

To Counteract the Effects of Salt.

EDITOR INDIA RUBBER WORLD: I am the inventor and patentee of an arrangement in which a certain amount of vulcanized India rubber is used. My apparatus is used in marine work, and no matter how carefully the rubber is compounded for it, it goes to pieces very soon. Do you know of anything that will protect India rubber when exposed to salt water or salt air? Is it the effect of the salt atmosphere upon the rubber, or is it the hard work that the rubber goes through that causes it to go to pieces inside of a month or two? L. M.

[Will some of our readers be kind enough to answer this inquiry?]

A Glimpse at the Past.

"AFTER I had been in the woollen business a number of years," said Mr. John H. Cheever, the treasurer of the New York Belting and Packing Co., a few days ago, "my attention was attracted to the rubber business, then being brought into prominence by the inventions of Charles Goodyear, and English experimentalists; and I went to Roxbury, Mass., and started a factory there more particularly for the manufacture of mechanical goods. This was in the year 1846, and during the first year we made goods to the value of $47,000. At about that time, I remember a remark of Mr. Charles Goodyear, who said that it would not be a great many years before it would take a "Lowell" to make all the mechanical goods needed in this country. I considered the prediction a little rash at the time, but subsequent events proved that it was very conservative, for a half dozen Lowells would hardly contain the manufactories now.

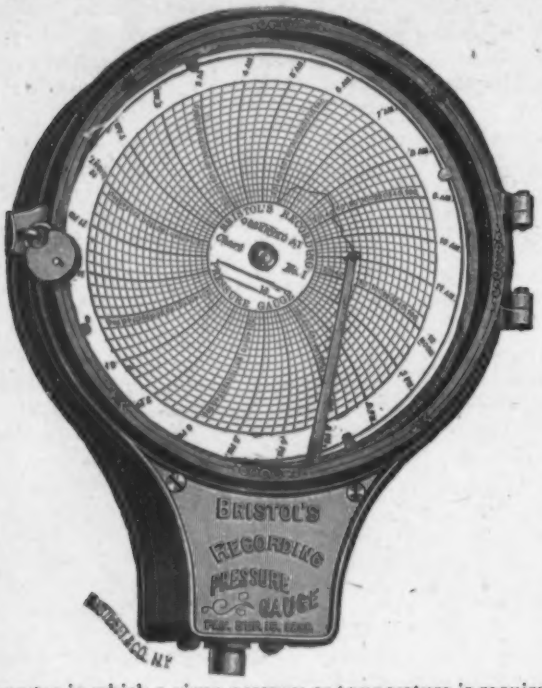
In those days India rubber was called gum elastic, and our goods were styled metallic gum elastic. Vulcanization was being perfected, and our difficulties in that line were almost insurmountable. We would get out a batch of goods and send it away with all the confidence imaginable only to have it often returned to us all stuck together. Then we used dry heat, and we would hang up our hose in a large room, which in the upper part would naturally be several degrees hotter than near the floor, and an uneven product would be the result. Finally we began to use steam heat, and we gradually worked along until we reached the present system. But the steps were difficult, and the varying results annoying. My first partnership was John H. Cheever & McBurney, afterward it was Tappan, McBurney & Cheever. Soon after some other mills were started, one at Beverley, Mass., and in other places. I consider Charles Goodyear's memory more deserving of a monument than our greatest hero. His difficulties were apparently unsurmountable, and they were met under oftentimes most trying circumstances, and the good he has done our civilization is worth more than the results of a score of battles.

I remained in Roxbury until 1856, when I left the works there in other hands."

THE mill hands of the Metropolitan Rubber Co. raised a subscription purse of one hundred and twenty-five dollars as a wedding present to their foreman, Mr. Wm. Poole, who was married on Thanksgiving Eve,

Bristol's Recording Pressure Gauge.

IN this day of economical steam generation the benefits resulting from the use of a recording gauge hardly need enumeration. Applied to steam boilers it shows at a glance whether the plant has received that attention, upon which depends, to a large degree, in the rubber business, safety, economy and efficiency. In connection with a heating plant or



apparatus in which a given pressure or temperature is required for a given period, the written record of a recording gauge shows whether the desired pressure or temperature has been maintained continuously as well as all variations and the times that they occurred.

Although the advantages of a recording gauge are acknowledged by steam users, the instruments have not come into general use. This may be accounted for by the fact the only instruments for this purpose have been complicated and consequently expensive. In designing the Recording Pressure Gauge herewith illustrated, the object was to produce an instrument which would be fundamentally simple and consequently reliable, and which could be placed upon the market at a moderate cost.

It is manufactured by the Bristol M'f'g Co., of Waterbury, Conn., who report that the gauges they already have sold are giving perfect satisfaction.

A REPORT by Dr. H. Trimmer, of Ceylon, states that the plant which produces Ceara is very hardy, and that it will grow in a dry rough soil and in a moderately dry atmosphere. As the Para and Central rubbers require a rich, alluvial soil, and a constantly moist atmosphere, it is possible that the Ceylon rubber is better adapted to the United States than are the others. The tree grows to a height of about thirty feet and has a dense, rounded crown. In two years it attains a diameter of four or five inches, when it may be tapped. Cultivation of this tree would seem to be practical.

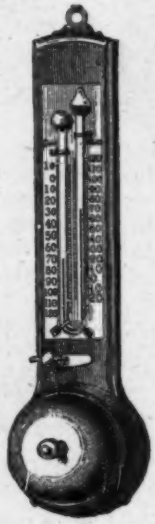
A Musical Steam Whistle.

THE ordinary steam whistle is without question a nuisance, and it was with this thought well in mind that the Crosby Steam Gauge and Valve Co. brought out their patent Single Bell Chime Steam Whistle. This is made on absolutely scientific principles and it has the peculiar merit of producing three distinct tones pitched to the first, third and fifth of the common musical scale, which harmonize and give an exceedingly agreeable chord. While it is more penetrating than the common whistle and can be heard to a greater distance, it has no harsh or disagreeable sound, and therefore is never the cause of complaint. In numerous factories where these whistles are used it has become the custom to establish a code of signals which prognosticate the weather for the day. In this way people not only listen to the whistle because of its musical sound, but they learn something from it each day. Manufactured by the Crosby Steam Gauge and Valve Co., 95 Oliver St., Boston, Mass.

An Excellent Thermometer.

MESSRS. Aug. Neubeck & Co., of 111 Nassau St. New York are manufacturing an Electric Alarm Thermometer that ought to be of interest to rubber manufacturers.

This Thermometer sounds an unfailing alarm whenever the temperature rises above, or falls below, any required points. It is designed for use in offices, schools, hospitals, living rooms, baths, breweries, cold storages, factories, and all places where the maintenance of an equable temperature is of importance. It can, when desired, be arranged to sound at any distance from the thermometer, and in this way may be used as an infallible guard against risk of fire. An accurate and inexpensive device, it can be made to do very valuable service about a rubber mill, and can be specially adapted to any use,



An Attractive Christmas Window.

THE Metropolitan Rubber Co. have in one of their large windows on Broadway, a representation of a fire-place on Christmas Eve after Santa Claus has done some fine work. Red shoe boxes indicate bricks, which are disposed in a symmetrical manner. The mantel draperies are of the linings of Mackintosh goods. The wood on the andirons is of rubber snakes. Santa Claus, meditating upon his work, is looking through a wreath of dead leaves, symbolical of the season. A clock, the handiwork of Mr. A. D. Hawkins, decorates the mantelpiece, its face figures giving way to the word "Metropolitan," which happens to be composed of twelve letters. Presents of Mackintoshes for wife and grandma, toys for the children, etc., everything in rubber, all form a picture very creditable to the taste and ingenuity of the designers, Mr. Hawkins and others.

Recent Rubber Patents.

No. 435,058.—Bed Pan; Abraham L. Freund, Chicago, Ill. This pan has an elastic marginal cushion, which constitutes the wall of the pan proper; a diaphragm underlying the cushion, forming the bottom of the pan; an elastic marginal cushion located below the upper cushion and making a support for the pan; a discharge pipe from the pan. It has also in combination a pipe for separately inflating the marginal cushious.

No. 435,069.—Slate Washer; Wm. F. Maclachlan, Chicago, Ill. This consists of an elastic bulb, wholly inclosing a chamber, and having a valve, actuated by the bulb to open a passage from the chamber, in which a sponge is set, the idea being for the bulb when in position to contain a sponge full of moisture, and when pressed to force a certain amount of it through the valvular opening.

No. 435,136.—Boot or Shoe Heel; Charles A. Erdman, Philadelphia, Pa. This is in brief a heel for a boot or shoe, formed of asphalt and disintegrated fibrous material pressed into desired shape and provided with projections on its upper surface to attachment to the shoe.

No. 435,159.—Hand Printing Stamp; Richard H. Smith, Springfield, Mass. This consists of a series of operating drums and a series of rubber printing bands actuated by these drums, set in a U shaped frame made of a single piece and provided with lugs and channels, into which the plates are adapted to be inserted and secured.

No. 435,197.—Atomizer for Toilet Fans; Nathaniel Wickliffe, New Orleans, La. This is a fan, having in combination a tube secured to one of the plates inside of the covering cloth, with a bulb at the lower end of the tube and at the outer end of the handle; the sponge or absorbent holder secured to the opposite end of the tube and having a cap hinged thereto.

No. 435,228.—Rubber-Dam Clamp; James W. Ivory, Philadelphia, Pa. A dental clamp having arms pivotly attached to the base and projecting therefrom to hold and carry a napkin or piece of bibulous material. This clamp is so constructed that the base is made of two thicknesses of metal with an interposed elastic material between the same, for the purpose specified.

No. 435,885.—Cotton Gin Roller; Frank H. Chase, Haverhill, Mass. This roller is formed of circular layers or disks of textile fabric compressed and placed upon a shaft, the collars and non-metallic flanges at the end of the shaft being made of leatherboard, rawhide, or other sufficiently stiff non-metallic material; the disks of textile fabric, and the collars and flanges having sides covered with unvulcanized rubber in the form of cement and then pressed together, forming one solid body.

No. 435,937.—Ink-Stand; John Larkin, Bradford, Pa. An ink reservoir having a flexible top and a tube moving up and down, which passes through the top for feeding the ink to the pen by pressure thereon. Also of a hard protecting case which surrounds the reservoir, provided with a vertical annular flange, which extends up around the outer end of the tube for protecting it against an accidental pressure.

No. 435,975.—Bottle and Stopper, Frank H. Moyer, Buffalo, N. Y. A bottle, having on its neck a pair of ribs or threads and in the inner portion of its mouth rim, recesses to fit these threads; a cap having inwardly extending ribs corresponding with the threads on the bottle neck and terminating above the lower edge of the cap and near its apex and inwardly extending rib; a stopper having a shank and a head, provided with an external circumferential curve, with which the rib on the upper portion of the cap engages for the purpose of permanently holding the stopper in the cap; an elastic rubber washer surrounding and bearing upon the said shank.

No. 435,995.—Wheel tire for Cycles; John B. Dunlop, Belfast, Ireland. A hollow air inflated rubber wheel tire for cycles and other vehicles, in combination with an inner expansible tube, an outer protective covering, together with strengthening folds or layers of cloth, canvas or linen, and protective strips of rubber interposed between the edges of the rim and strengthening the folds or layers.

No. 436,358.—Sole-cutting Machine; Margaret E. Knight, South Framingham, Mass. This is a sole-cutting machine in which there is first a lower stock support, and intermittently vertically moving pattern which automatically clamps the stock to the support during the cutting operation; a knife carrier held above the pattern, held close to it by a spring; a knife which has an automatic adjustment radially to the curves of the pattern and independent of its carrier, and a train of gears through which motion is given to the knive carrier whereby it is revolved around the pattern which the knife is adapted to follow, either for what is known as a "straight cut" or a "skive."

No. 436,432.—Electric Conductor; William H. Oehrle, Philadelphia, Pa. A flexible conductor consisting of a core covered with an insulating material; a moisture repellant material consisting of a longitudinal strip of rubber; and insulating material consisting of fibrous material coated with non-inflammable composition, and an exterior braided covering, the composition or covering consisting of alum, borax, magnesia, French chalk, plaster of Paris, and silicate of soda.

No. 436,553.—Heel; Benjamin F. Wilson, St. Louis, Mo. A rubber top lift for heels for boots or shoes consisting of a series of curvilinear corrugations of the configuration of the heel, and an exterior solid portion, provided with countersunk openings.

No. 436,569.—Stopper for Bottles; Adolph Roetmer and Fred. W. Roll, Milwaukee, Wis. A bottle stopper consisting of a body portion having a continuous spiral cam upon its upper end; a stem extending through the body; an elastic rubber gland surrounding the stem and laid between the body and the base, and a head secured to the upper end of the stem on which are finger pieces, and provided also upon its under side with a continuous spiral cam which engages with the cam of the body portion to expand the rubber gland that is filling the neck of the bottle.

No. 436,580.—Atomizer; Ole O. E. Hoell, Chicago, Ill. The combination of a receptacle of metal or glass with an atomizing chamber upon its upper end; an opening in the side of the atomizing chamber formed with the neck and provided with a removable stopper having an opening through it, to which is attached a blast tube, and a liquid tube connecting with and extending downward into the receptacle.

No. 436,733.—Insulating Material; James W. Easton, New York. This material, described briefly, consists of soapstone, a waterproofing material and a fibrous substance moulded together in the form of a homogeneous compound.

No. 436,758.—Book; Horace D. Honey, Holyoke, Mass. This book comprises a series of leaf-sections, each of which consists of a number of superposed leaves, all folded in a common median line. Bands of elastic rubber or rubber cloth cross the folded edges of the leaf sections and the line of stitches for each leaf-section passes through and through the sheets and through the elastic cross bands at the line of the fold, securing the sheets of each section together and to the cross bands, and holding the backs of the leaf sections together under a lateral yielding pressure.

No. 436,872.—Elastic Woven Fabric; Joseph W. Green and Edmund H. Sawyer, Easthampton, Mass. An elastic fabric provided at its edges with elastic wraps covered with braided fibrous threads.

No. 437,049.—Heel Protector for Rubber Shoes; John Siegel, Montreal, Can. A heel protector for rubbers composed of a metallic plate conforming to the size and shape of the heel to be covered, but slightly smaller and drawn in at the instep; a curved instep edge, conforming to the curve of the instep so as to fit it closely and a rim at the right angle of the plate extending around the plate from one end of the instep edge to the other and provided with a ridge or ridges.

No. 437,209.—Toy; James H. Lancaster, New York, N. Y. The cut of this invention represents a frog. From the wordy and complicated description we gather that it is a toy similar to the popular jumping dog, but that in addition to the funny little hop that the woolly dog gave, this frog is able not only to hop, but to croak.

No. 437,330.—Electric Cable; David Brooks, Jr., Philadelphia, Pa., assignor to the Electric Cable Construction and Maintenance Co. of Pennsylvania. This is a cable made up of a bunch of dry fibrous covered wires, having the interstices between the wires filled with dry air, a coating powder on the wires, and an air-tight encasement enclosing the whole.

No. 437,447.—Tire for Cycle Wheels; Albert H. Overman, Springfield, Mass., assignor to the Overman Wheel Co., Hartford Conn. A skeleton tire having one or more spaces in its under surface. which is formed with bases of sufficient area to support it, and a re-enforcing strip attached directly to the said bases and extending transversely across the tire under its open space or spaces, which it does not obstruct. In other words, a tire composed of an arch-shaped outer shell and two or more inseated elastic arch shaped inner shells which are independently removabie, to regulate the elasticity of the tire.

No. 437,478.—Weather Strip; George A. Capewell and John E. Capewell, Woodbury. Conn. A strip made up of a wood body, a metal facing, the wood rabbeted on its face side at the upper edge, so as to form a groove between the metal plate and the wood, combined with a flexible packing securedin the groove between the metal and the wood, the upper edge of the metal turned outward to form a flange with a hinged plate, so arranged as to be atttached to the door and constructed with a groove upon its inside at its lower edge corresponding to the aforementioned flange of the metal facing, by which means the strip is hinged to the door.

No. 437,608.—Rubber Sole for Boots or Shoes; Howard T. Marshall, Brockton, Mass. A boot or shoe sole of India rubber, or any of its compounds, having its wearing surface provided with a marginal flange and a series of hollow projections, each consisting of an outwardly projecting margin, a central depression and an intermediate ledge.

No. 437,632.—Insulated Wire; Charles F. Splitdorf, New York. A wire or conductor for electrical and other purposes covered with a flat strip of mica, provided with protecting material, and wound with such substances as silk paper, cotton or thread, the strips being wound spirally on the wire.

No. 437,639.—Rubber Overshoe; Erskine F. Bickford, Malden, Mass., assignor to the Boston Rubber Shoe Co., Malden, Mass. An improved rubber sandal or foothold comprising the usual upper and the sole, provided with an extension which is integral with the sole and applied to its rear edge under the instep to project forward at an obtuse angle, whereby its edge presses against the sole of the shoe at that point for the purpose of preventing the admission of moisture. The name of this shoe is the "Veto," which is the subject of a copyright owned by the Boston Rubber Shoe Company.

Reissue No. 11,105.—Vulcanizer; Charles A. Davis, Rochester, N. Y., assignor to the S. S. White Dental Mfg Co., of Philadelphia, Pa. This is an open top boiler provided with a flange or shoulder, the support provided with a seat upon which the shoulder of the boiler rests, the cover for the boiler top and means for connecting the cover with the support for forcing the cover down upon the boiler top.

Reissue. No. 11,106.—Waterproof and Fireproof Material; for Roofing; Alois Blank, St. Louis, Mo. Claim is a metallized asbestos material composed of a body of asbestos filled with a carbonaceous material, a coat of copper adhering to the latter and entering between the fibres of the asbestos, with an outer sheet or layer of metal overlying the copper.

THE elastic web manufacturers in both the United States and England are making a concerted effort to prevent the use of oil in dressing the leather used for uppers in congress gaiters, as the use of leather containing oil or grease where it comes in contact with Elastic Webs is highly objectionable inasmuch as any oily or greasy substance, however employed, causes decomposition of the India-rubber thread.

The Rubber Markets.

NEW YORK, December, 12, 1890.

THE rubber market has naturally felt the effect of the financial troubles in London and of the great stringency which has prevailed in our money market. These influences, coming at a time when the large receipts in Pará were beginning to arrive, have caused a disposition on the part of the manufacturers to hold off in the expectation of lower values, and it has been felt that with money ruling so high, speculation would hardly take hold of merchandise. Owing to these unusual circumstances, the fact of the winter having opened with a good deal of snow and cold weather has failed to be as cheering in the rubber market as it would have been under other circumstances. At the time of our going to press, the financial outlook is decidedly better, and it is considered by many of our leading financiers that the crisis is substantially over, and that from now on an increasing supply of money can be expected, in fact, it is not unlikely that the stringency will be followed, at a not far distant day, by an abundance of money. With cheap money and a return of confidence there is likely to

"TYRIAN"

HOT WATER BOTTLES.

For the Winter Months.

All Rubber

Cloth Inserted

The All-Rubber Bottles are heavy, well made and first-class in every particular.

Cloth Inserted differ from the All-Rubber only in having a piece of cloth inserted in the Rubber to strengthen them.

We are covering Water Bottles with OLD GOLD and BLUE PLUSH, which gives them a very handsome appearance. Recommended by physicians on account of being so soft and warm when in contact with the flesh. A new thing and very popular with the trade. Each bottle tagged "TYRIAN."

Flannel Covered

Plush Covered

Each Bottle put up in a neat paste-board box bearing our Name and Trade-mark

"TYRIAN."

TYER RUBBER CO.,

Office & Factory, Andover, Mass. Sample Room, 50 Bromfield St., Boston.

MANUFACTURERS OF

DRUGGISTS' AND SURGICAL RUBBER GOODS,

Fountain, Bulb and Hard Rubber Syringes, Atomizers, Hot Water Bottles, Nursing Bottles, Bandages, Urinals, Letter Bands, Bed Pans, Invalid Cushions, Chair Tips, Stopples, Nipples, Bulbs, Sheeting, Tubing, Etc.

MOULD WORK A SPECIALTY.

Mention the India Rubber World when you write.

be developed not only a very large consuming demand, but speculative movements in addition to take advantage of the present low prices.

Sales have not been large, and principally for cash. Rubber paper has been very slow of sale and purchases on time have been very difficult to make.

The strength of the market is best shown by the fact that during the past month the credit of many a large merchant has been assailed successfully, foreign exchanges have been placed in confusion, banks have resorted to extraordinary measures to maintain their standing, the whole commercial world thrown into a state of anxiety, and yet rubber has only declined about four cents during the month.

The future of the market of course is uncertain, but on the whole, bearing in mind the fact that manufacturers both in Europe and the United States are probably possessed of less stock than at any previous season, it would look as though rubber consumers would hardly be justified in looking for any further, or at least for any radical decline, from present values; whilst, as indicated above, a favorable turn of financial matters, and the continuance of severe winter weather, would probably cause a material reaction in rubber.

It is reported from Brazil in this connection, that the Mercantile Company of Pará, which is managed as is known by Mr. Vianna, has combined with a new company formed in Rio, with a capital of 20,000 contos, or $10,000,000, and that Vianna will be the active representative of the combination at Pará. Exactly what there is in all this it is hard to say, but if Vianna should be backed by large native capital there is no doubt that it would be soon felt in the rubber market as a potent bull. Such a lead would probably be followed by speculative cliques, which are understood to exist in Havre and Hamburg, awaiting a favorable opportunity.

During the month of November the arrivals of Pará were by five steamers arriving with cargoes in round amounts, as follows: *Paraense*, 340,000 lbs.; *Seguranza*, 270,000 lbs.; *Ambrose*, 300,000 lbs.; *Advance*, 180,000 lbs.; and *Augustine*, 650,000 lbs.; a total of about 2,200,000 lbs. Since the first of the month the *Augustine* has arrived with 244 tons, and on passage are the *Ambrose*, which sailed December 2 with 118 tons, and the *Cyril*, which sailed December 9 from Manaos and Pará with 350 tons. The next steamers from Pará will not sail before the 22d, so the receipts during the current month will be considerably smaller than for November, and possibly the shipments from Pará have passed the minimum point for the season.

Dealers in New York with abundant means for obtaining information in the Amazon region, claim that there are not so many natives at work in the forests and that results will soon show what they say in diminished receipts. Stocks on the Amazon, however, quite large, being stated at 210 tons, and shipments are reported by cable on the 10th to be 2400 and 1400 tons of island rubber with exchange at 22½d.

The world stock of Pará rubber December 1 was 2873 tons, as compared with 2400 tons November 1 and 2300 tons December 1, 1889, distributed as follows: New York, 450 tons, as against with 244 tons last year; Europe, 830 tons, as against Pará and Manaos, 740 tons, against 570 tons; afloat, against 916 tons. The receipts for November at Pará were 1900 tons, as compared with 1640 in the same month last year. Receipts for December, 1889, were 1780 tons. The total deliveries in the United States were placed at 1000 tons, but the actual results show that 983 tons were for consumption, making with European deliveries of 563 tons a grand total of 1546 tons, the largest recorded. In December, 1889, the deliveries were 1380 tons.

The latest quotations in the New York market are:

Para, fine, new	69-70	Tongues	43-44
Para, fine, old		Sierra Leone	42-47
Para, coarse, new	47-49	Benguela	52-53
Para, coarse, old		Congo Ball	41-43
Caucho (Peruvian) strip	44-45	Small Ball	40-42
Caucho (Peruvian) ball	52-24	Soft Ball	30-31
Mangabeaira, sheet		Wlake, Lump and Ord	30-31
Esmeralda, sausage	50-52	Mozambique, red ball	
Esmeralda, strip	48-50	Mozambique, white ball	
Guayaquil, strip	40-45	Madagascar, pinky	65
Virgin Scrap		Madagascar, black	48-50
Carthagena, strip	38-40	Borneo	34-47
Nicaragua, scrap	48-50	Gutta pa[illegible] fine grade	140@150
Nicaragua, sheet	46-48	Gutta percha, medium	100
Guatemala, sheet	40-42	Gutta percha, mixed white	90
Thimbles	40-42	Gutta percha, lower sorts	50@75

The receipts of gutta percha were larger in November than for the preceding month. The higher grades are scarce, especially second qualities. Lower grades are plentiful.

November 29, 1890.

Statistics of Pará Rubber.

Stock of Pará here October 31st,			about	900,000	lbs.
Receipts	"	November,	"	2,198,000	"
Deliveries	"	"	"	1,998,000	"
Stock	"	November 30, 1890,	"	1,100,000	"
"	"	" "	1889,	700,000	"
"	"	" "	1888,	1,775,000	"

Prices for November.

	1890.		1889.		1888.	
	Fine.	Coarse.	Fine.	Coarse.	Fine.	Coarse.
First,	74	53	72	50	68½	46
Highest,	74	53	73	55	70	47
Lowest,	72	49	71	50	68½	46
Last,	72	50	73	55	69	47

The demand for belting is just now very slow. Mining companies have taken a good supply of belting during the past year, and there is yet a good export demand. Grain elevators are taking very little at present. Paper mills during the year have bought largely, as they have extended their plants to fill an export demand. For a long time the demand for belting and packing has been on the wane, cheap goods having been almost altogether neglected. Now the better grades are in poor demand, a fact that is attributed to the financial squeeze. Garden and other hose is dull for domestic demand.

In retailers' hands the demand for shoes has quickened very perceptibly during the past month, the weather having been seasonable. There is believed to be no congestion of stocks anywhere, and the mills are very busy. Prices are very firm, 38 and 6 per cent. being the invariable discount.

The event of the month in rubber boot and shoe circles, was the sale at Boston of 20,000 cases out of style, and damaged goods. There was a good attendance, but the prices were low; lower than last year, which is attributed to the money situation, the terms of the sale being spot cash.

A good many syringes, combs and druggists' specialties are lately taken for export to South America. The hard rubber business seems to be in good shape.

Clothing is very dull, the business for fine mackintoshes being in a state approaching *nil*. The "rich man's panic" has sadly cut down the demand for everything approaching ideas of luxury. As one large manufacturer put it, we have nothing to do but to "wait until the clouds roll by."

IN a business correspondence of recent date Messrs. Brook, Oliphant & Co., Trenton, N. J., have this pleasant information to communicate: "We have been running full all the year, have greatly increased our facilities, capacity, output and working force."